Hoshizaki

Hoshizaki America, Inc.

Modular Crescent Cuber

Models
KM-320MAH, MWH
KM-515MAH, MWH, MRH
KM-600MAH
KM-650MAH, MWH(-M), MRH
KM-901MAH, MWH, MRH/3

SERVICE MANUAL

"A Superior Degree of Reliability"

www.hoshizaki.com

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⚠ WARNING

Only qualified service technicians should install and service the appliance. To obtain the name and phone number of your local Hoshizaki Certified Service Representative, visit www.hoshizaki.com. No service should be undertaken until the technician has thoroughly read this Service Manual. Failure to service and maintain the appliance in accordance with this manual will adversely affect safety, performance, component life, and warranty coverage. Proper installation is the responsibility of the installer. Product failure or property damage due to improper installation is not covered under warranty.

Hoshizaki provides this manual primarily to assist qualified service technicians in the service of the appliance.

Should the reader have any questions or concerns which have not been satisfactorily addressed, please call, send an e-mail message, or write to the Hoshizaki Technical Support Department for assistance.

Phone: 1-800-233-1940; (770) 487-2331
Fax: 1-800-843-1056; (770) 487-3360

E-mail: techsupport@hoshizaki.com

HOSHIZAKI AMERICA, INC.
618 Highway 74 South
Peachtree City, GA 30269
Attn: Hoshizaki Technical Support Department

Web Site: www.hoshizaki.com

NOTE: To expedite assistance, all correspondence/communication MUST include the following information:

- Model Number ______________
- Serial Number ______________
- Complete and detailed explanation of the problem.

IMPORTANT
This manual should be read carefully before the appliance is serviced. Read the warnings and guidelines contained in this manual carefully as they provide essential information for the continued safe use, service, and maintenance of the appliance. Retain this manual for any further reference that may be necessary.

CONTENTS

Important Safety Information

Throughout this manual, notices appear to bring your attention to situations which could result in death, serious injury, damage to the appliance, or damage to property.

⚠ **WARNING**	**Indicates a hazardous situation which could result in death or serious injury.**
NOTICE	**Indicates a situation which could result in damage to the appliance or property.**
IMPORTANT	**Indicates important information about the use and care of the appliance.**

⚠ WARNING

The appliance should be destined only to the use for which it has been expressly conceived. Any other use should be considered improper and therefore dangerous. The manufacturer cannot be held responsible for injury or damage resulting from improper, incorrect, and unreasonable use. Failure to service and maintain the appliance in accordance with this manual will adversely affect safety, performance, component life, and warranty coverage and may result in costly water damage.
To reduce the risk of death, electric shock, serious injury, or fire, follow basic precautions including the following:

- Only qualified service technicians should install and service this appliance.
- The appliance must be installed in accordance with applicable national, state, and local codes and regulations. Failure to meet these code requirements could result in death, electric shock, serious injury, fire, or damage to the appliance.
- Electrical connection must be hard-wired and must meet national, state, and local electrical code requirements. Failure to meet these code requirements could result in death, electric shock, serious injury, fire, or severe damage to equipment.
- The appliance requires an independent power supply of proper capacity. See the nameplate for electrical specifications. Failure to use an independent power supply of proper capacity can result in a tripped breaker, blown fuses, damage to existing wiring, or component failure. This could lead to heat generation or fire.
- **THE ICEMAKER MUST BE GROUNDED.** Failure to properly ground the icemaker could result in death or serious injury.
- Before servicing the appliance, move the control switch to the "OFF" position and turn off the power supply. Lockout/Tagout to prevent the power supply from being turned back on inadvertently.
- To reduce the risk of electric shock, do not touch the control switch with damp hands.
- Do not make any alterations to the unit. Alterations could result in electric shock, injury, fire, or damage to the unit.

⚠ WARNING, continued

- The appliance is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be properly supervised around this appliance.
- Do not climb, stand, or hang on the appliance or allow children or animals to do so. Serious injury could occur or the appliance could be damaged.
- Do not use combustible spray or place volatile or flammable substances near the appliance. They might catch fire.
- Keep the area around the appliance clean. Dirt, dust, or insects in the appliance could cause harm to individuals or damage to the appliance.

Additional Warning for Remote Models

- **THE REMOTE CONDENSER UNIT MUST BE GROUNDED.** The power supply and ground wire to the remote condenser unit are supplied from the icemaker. Failure to properly ground the remote condenser unit could result in death or serious injury.
- Move the icemaker control switch to the "OFF" position and turn off the power supply to the icemaker before servicing the remote condenser unit. Lockout/Tagout to prevent the power supply from being turned back on inadvertently.

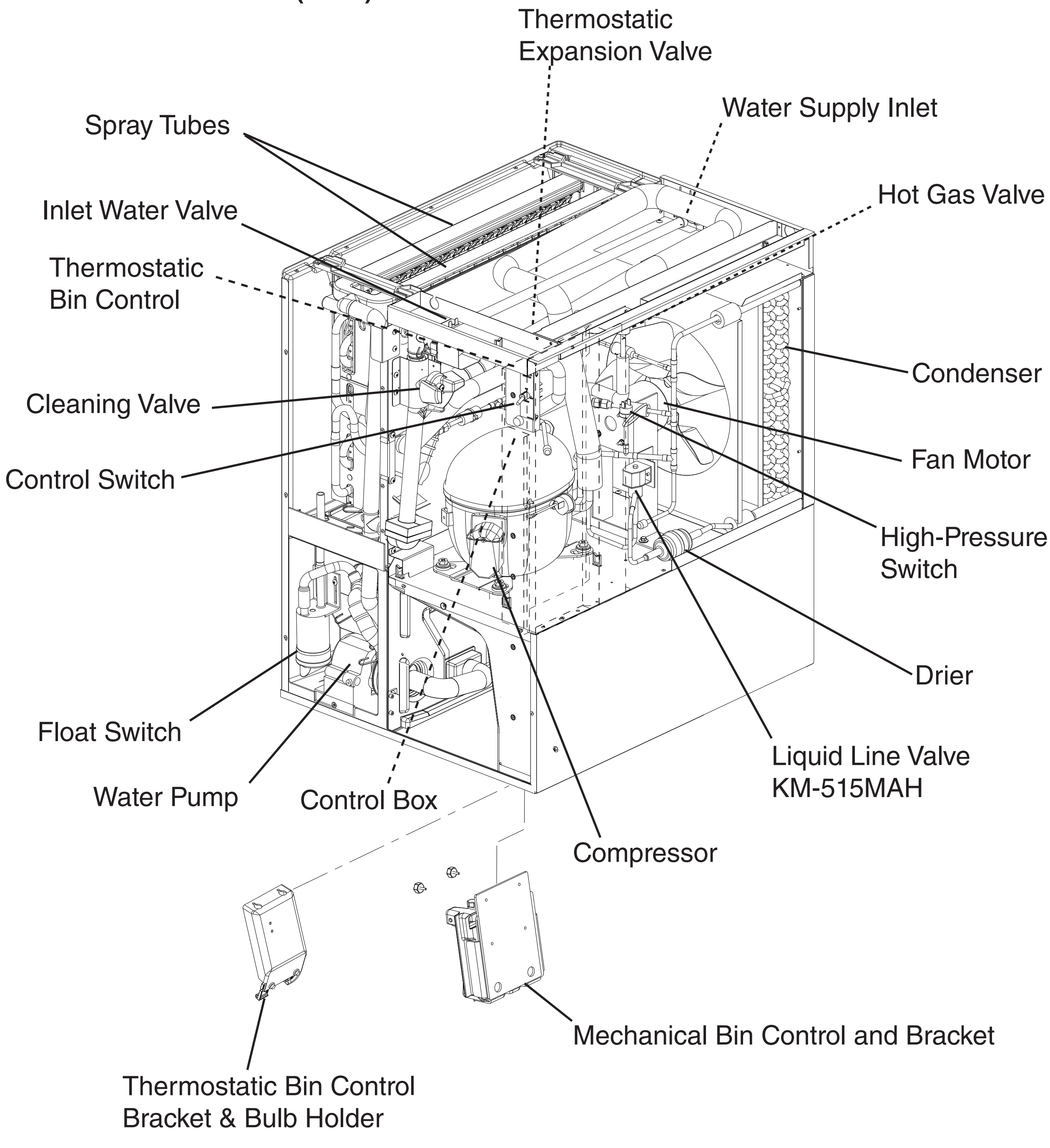
NOTICE

- Follow the instructions in this manual carefully to reduce the risk of costly water damage.
- In areas where water damage is a concern, install in a contained area with a floor drain.
- Install the appliance in a location that stays above freezing. Normal operating ambient temperature must be within 45°F to 100°F (7°C to 38°C).
- Do not leave the appliance on during extended periods of non-use, extended absences, or in sub-freezing temperatures. To properly prepare the appliance for these occasions, follow the instructions in "VI. Preparing the Appliance for Periods of Non-Use."
- Do not place objects on top of the appliance.
- The dispenser unit/ice storage bin is for ice use only. Do not store anything else in the dispenser unit/ice storage bin.

I. Construction and Water/Refrigeration Circuit Diagram

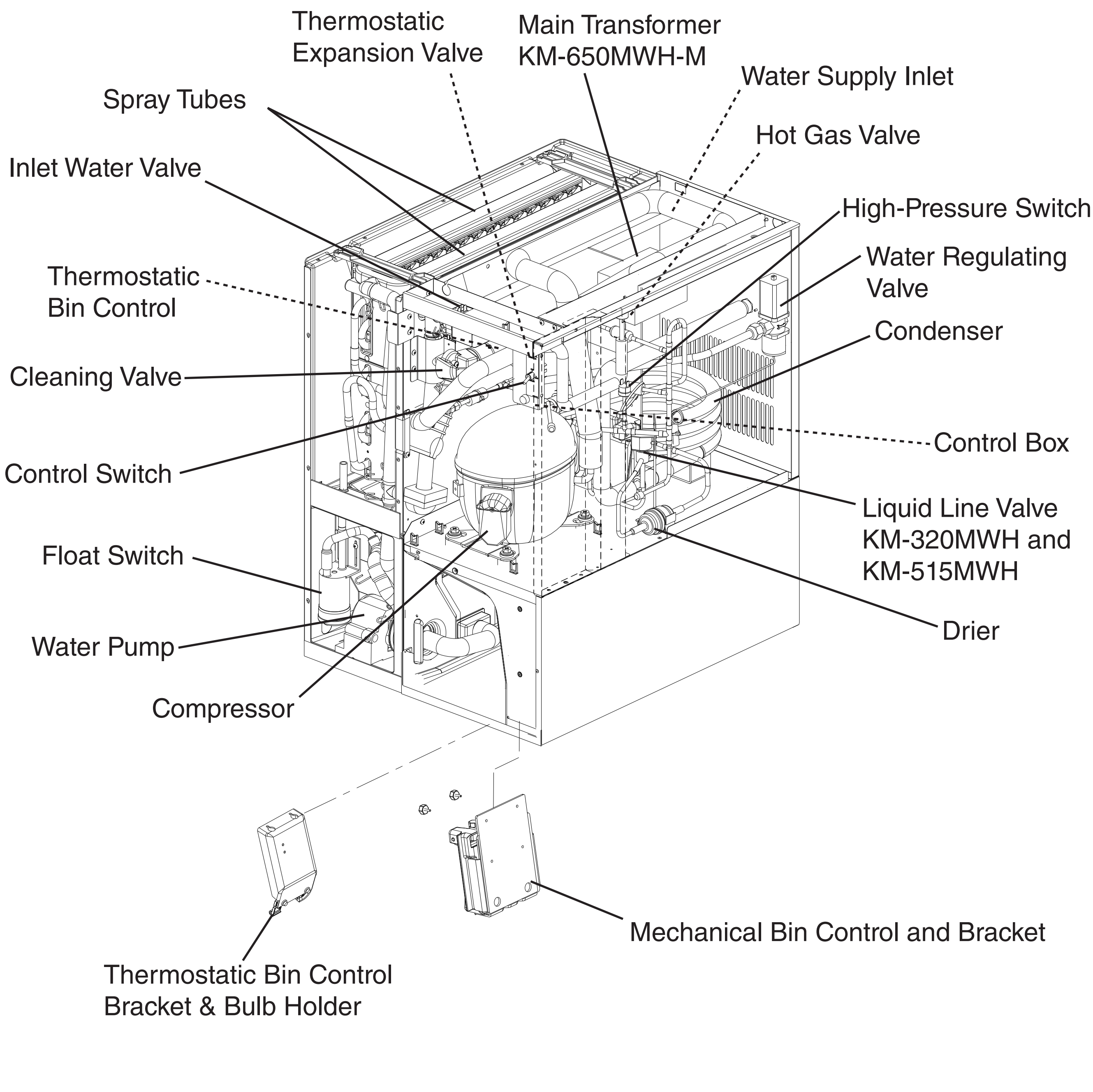
A. Construction

1. Air-Cooled Models (MAH)



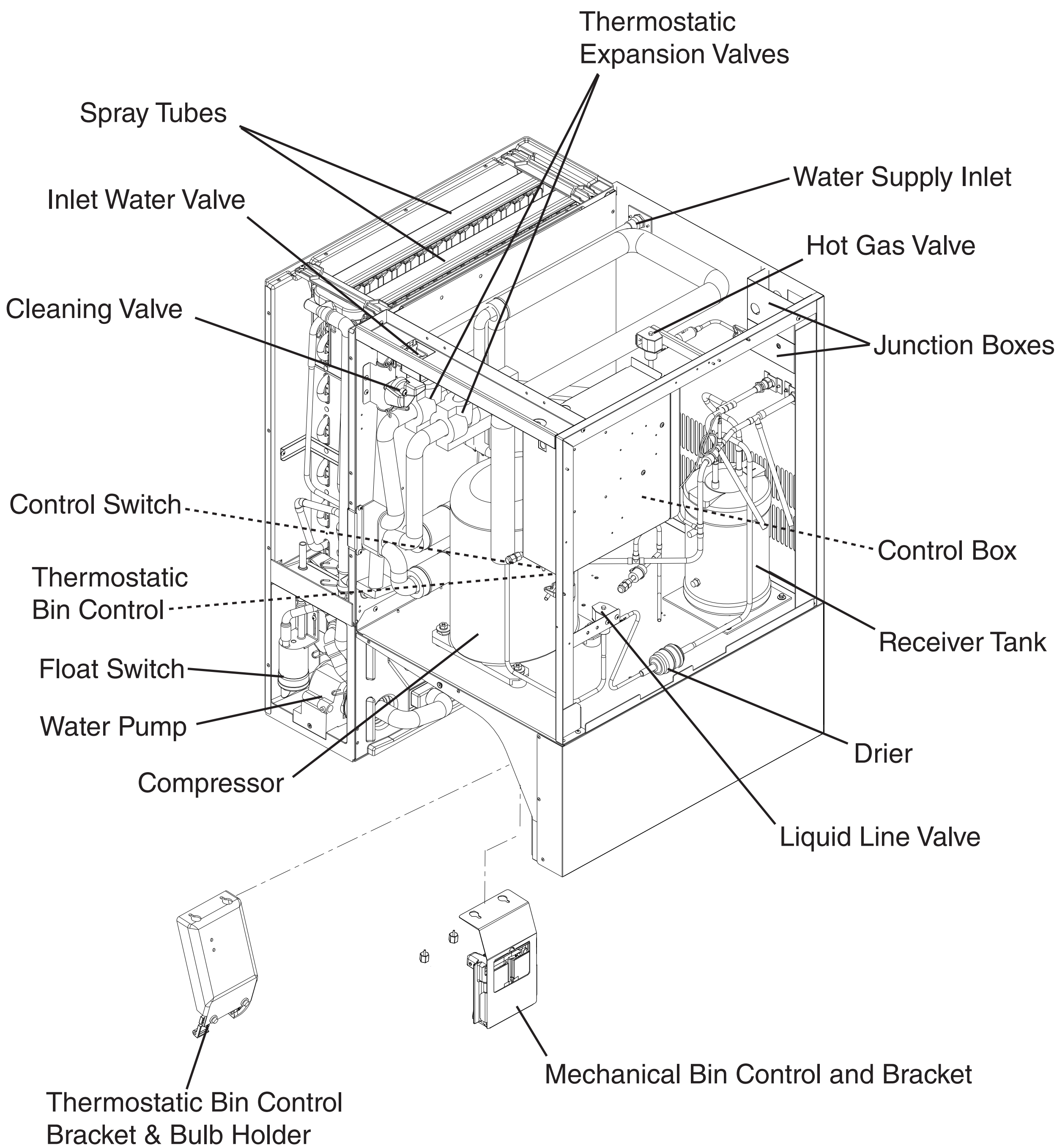
Model Shown: KM-515MAH

2. Water-Cooled Models (MWH(-M))



Model Shown: KM-515MWH

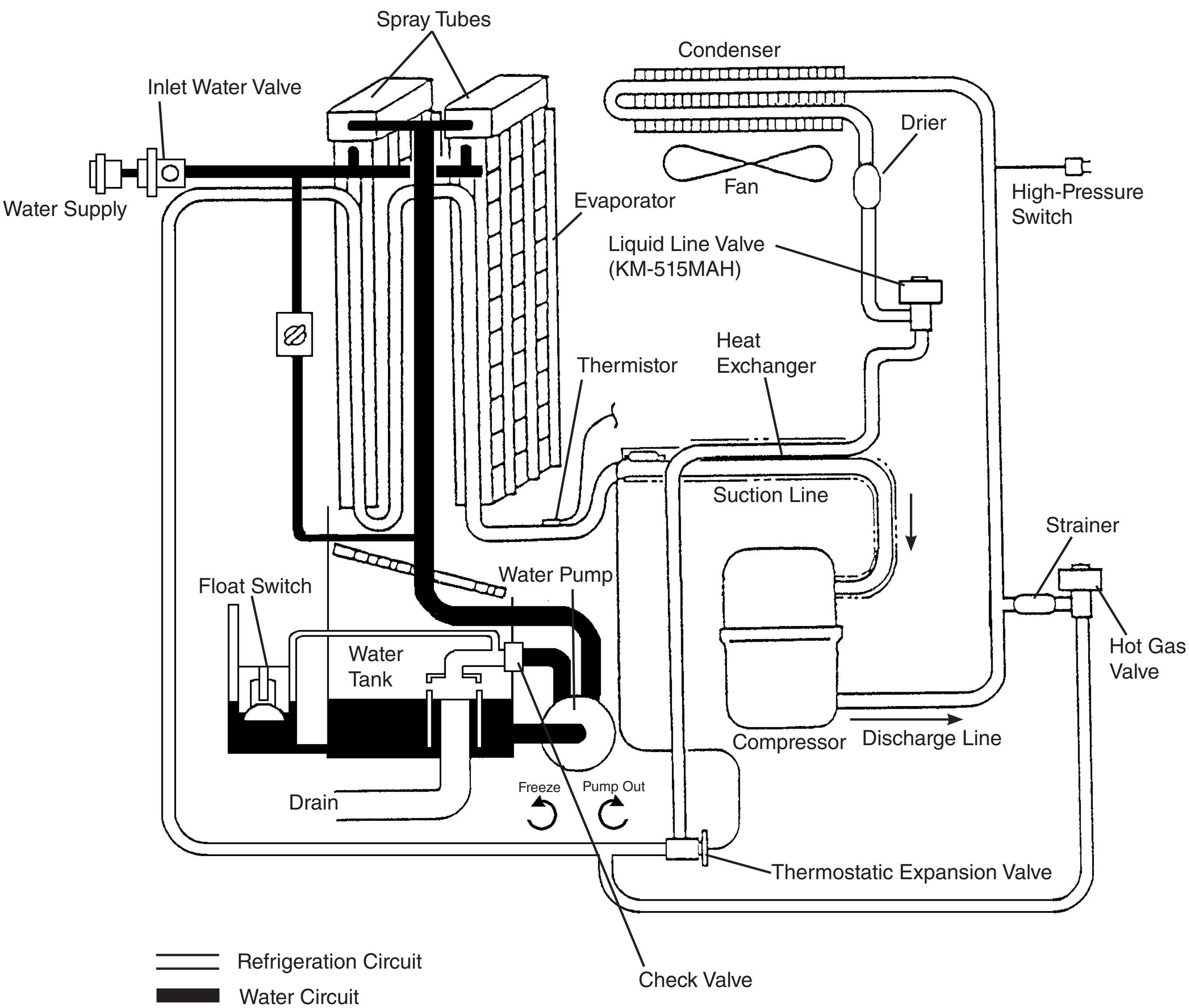
3. Remote Models (MRH/3)



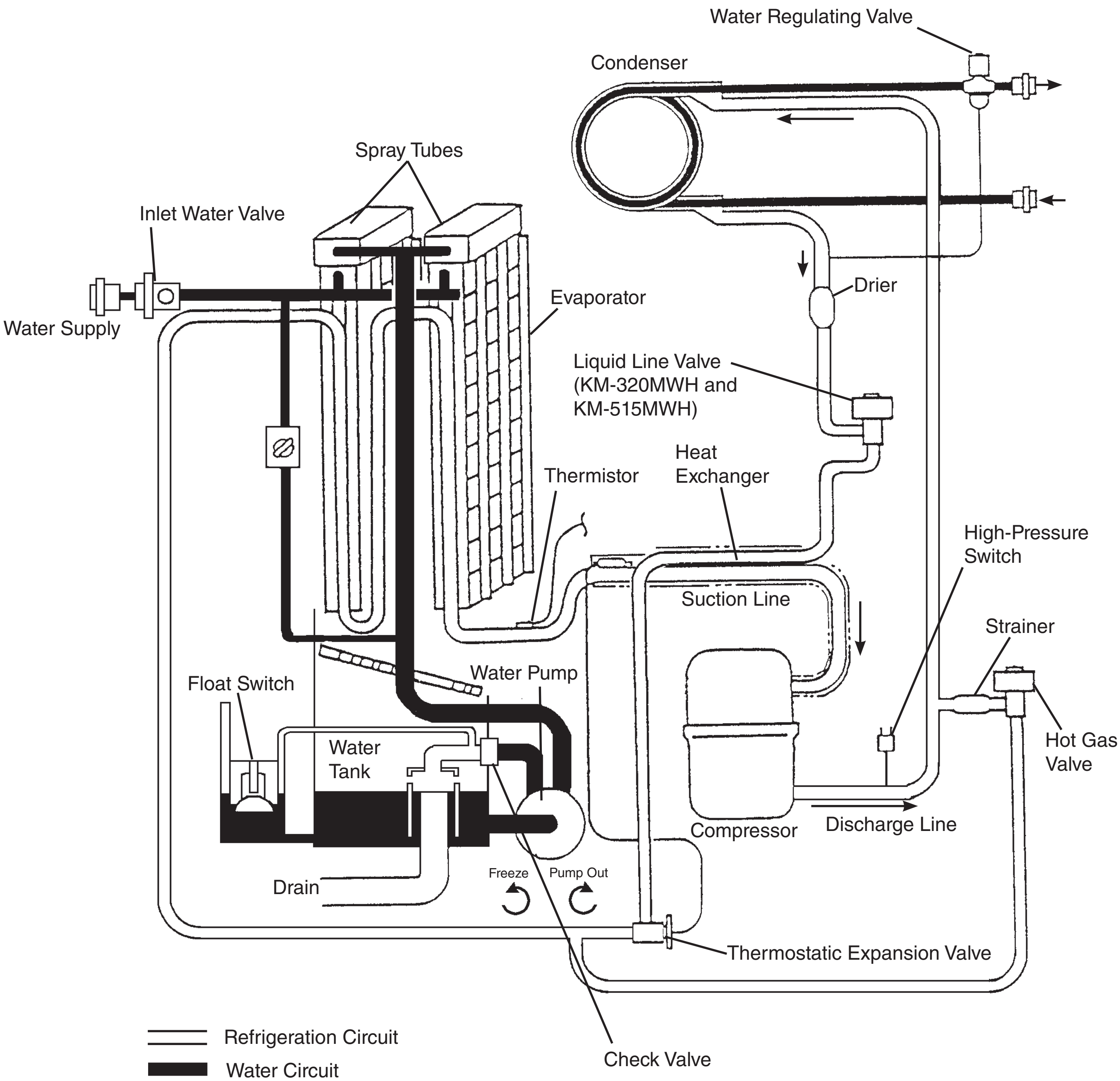
Model Shown: KM-901MRH

B. Water/Refrigeration Circuit Diagram

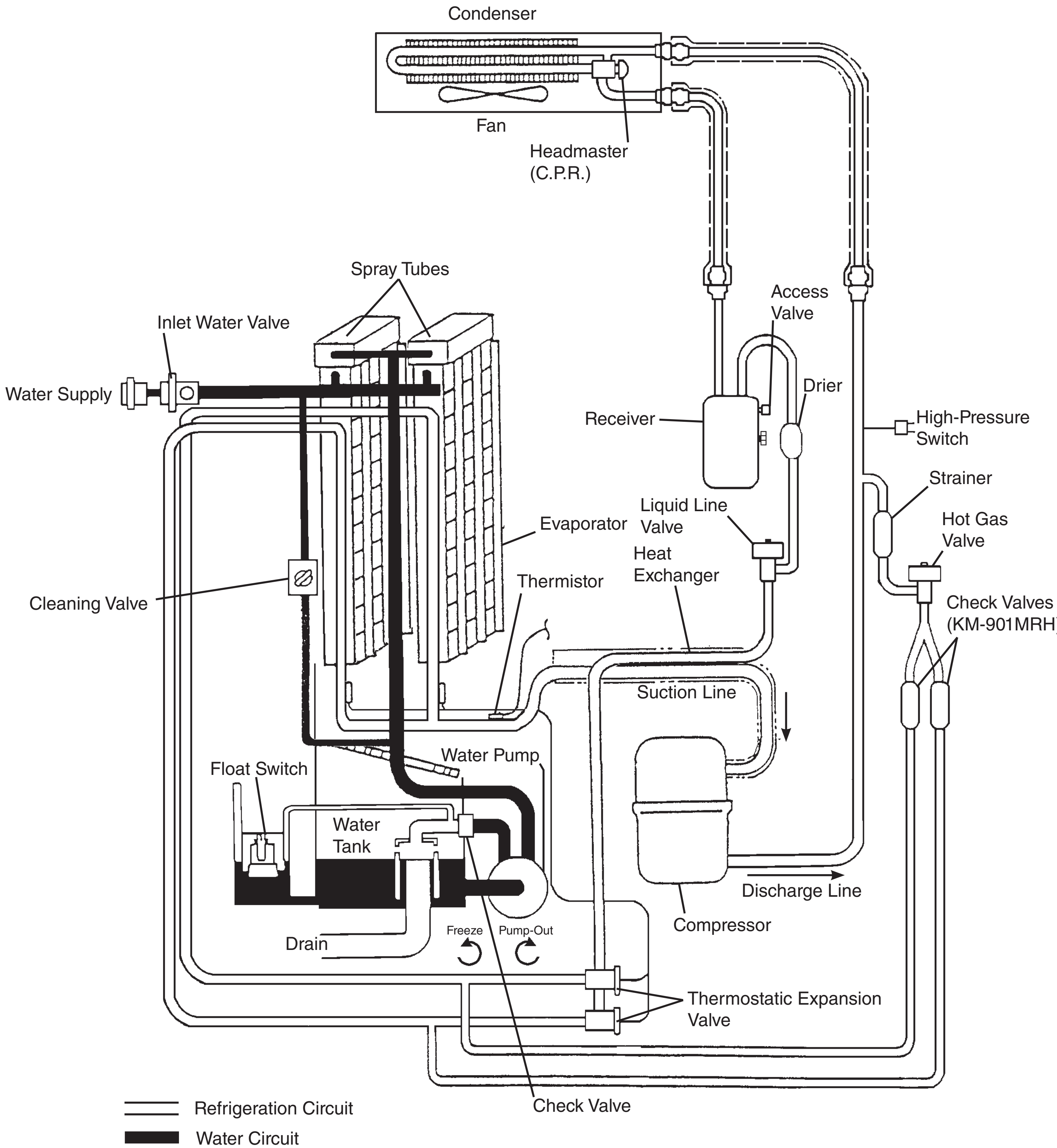
1. Air-Cooled Models (MAH)



2. Water-Cooled Models (MWH(-M))



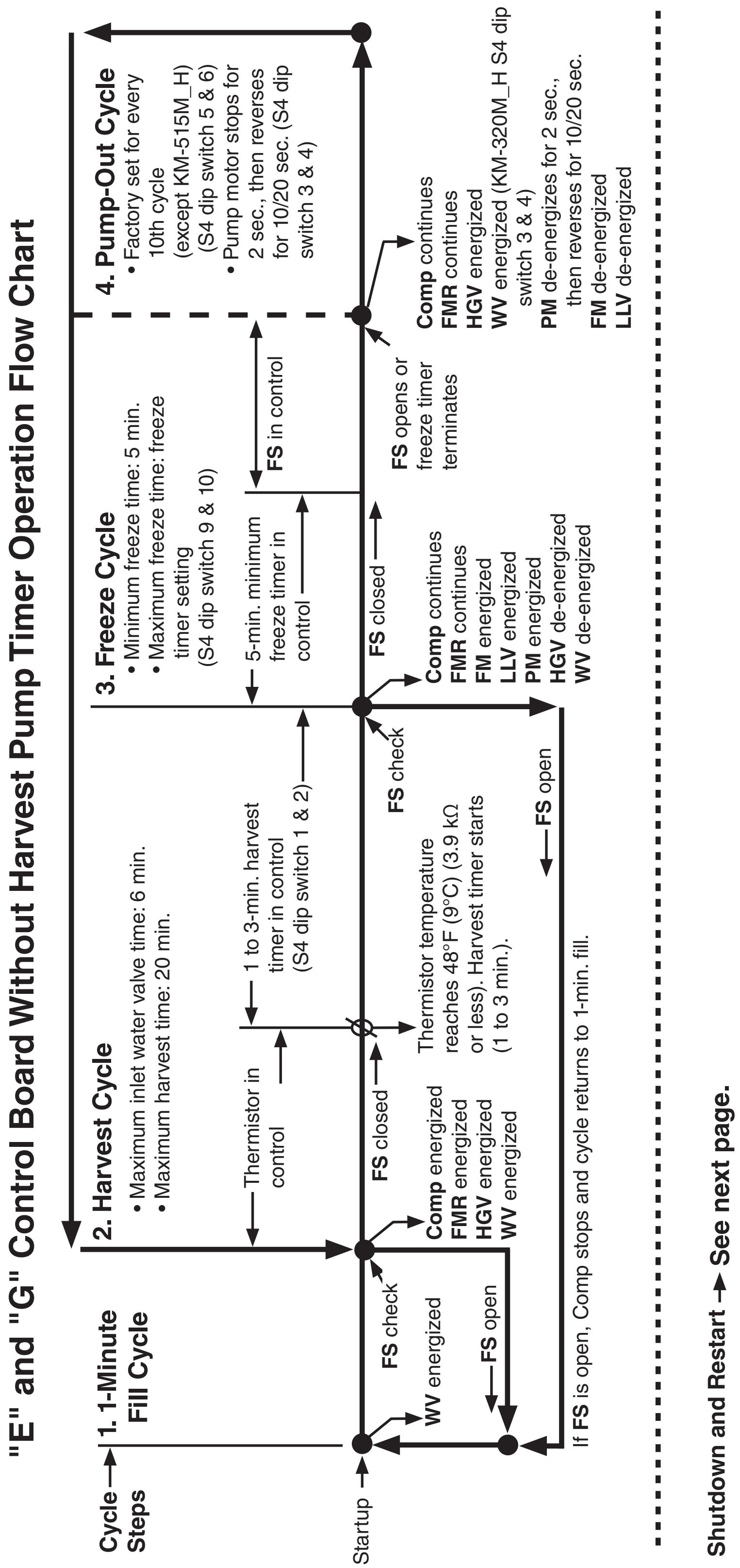
3. Remote Models (MRH/3)



II. Sequence of Operation and Service Diagnosis

A. Sequence of Operation Flow Chart

1. "E" and "G" Control Board without Harvest Pump Timer Operation



Components Energized when the Control Switch is in the "WASH" Position

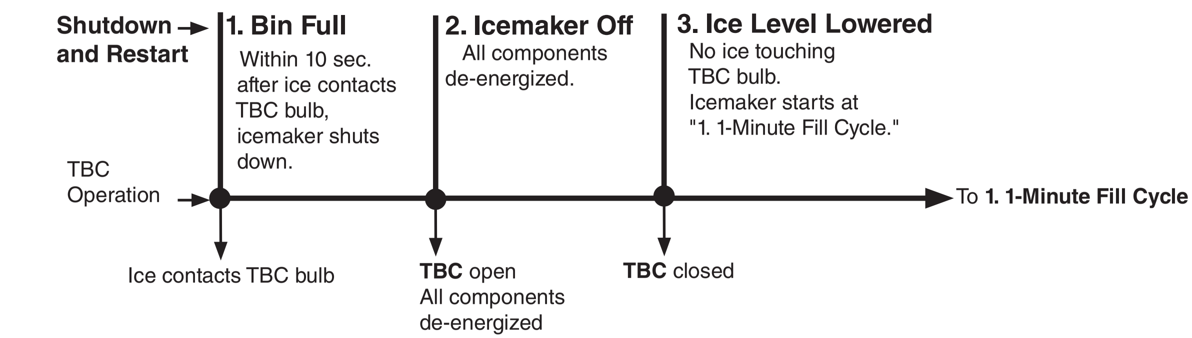
The "WASH" position on the control switch is used when cleaning and sanitizing the icemaker. When in the "WASH" position, power is supplied to the pump motor. With the cleaning valve closed, the cleaner and sanitizer flow over the outside of the evaporator plate assembly. With the cleaning valve open, the cleaner and sanitizer flow over both the outside and the inside of the evaporator plate assembly.

Note: Close the cleaning valve after cleaning and sanitizing are complete, otherwise the icemaker will not restart when the control switch is placed in the "ICE" position.

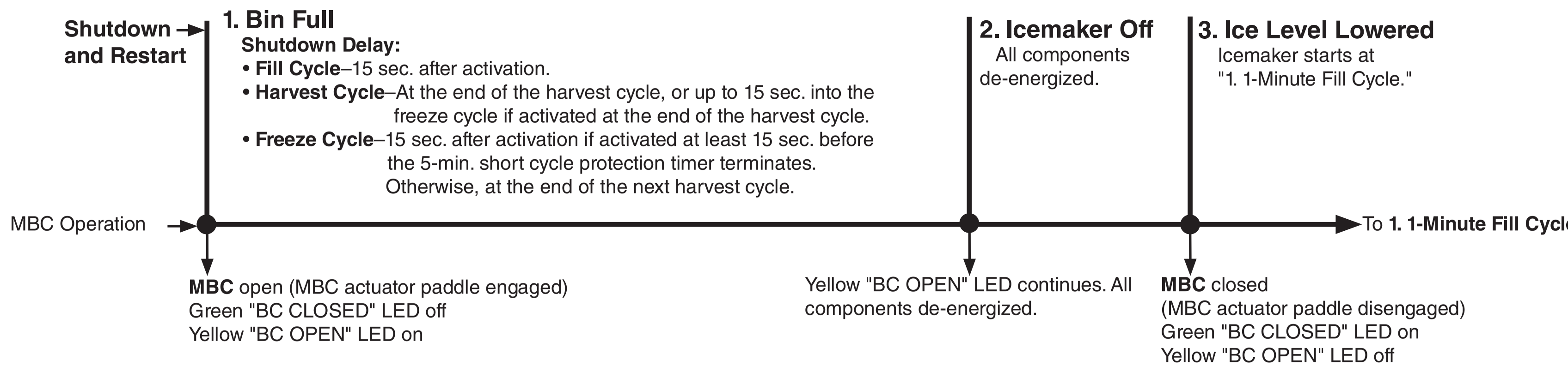
Legend:
- **Comp**–compressor
- **FM**–fan motor
- **FMR**–fan motor-remote
- **FS**–float switch
- **HGV**–hot gas valve
- **LLV**–liquid line valve
- **PM**–pump motor
- **WV**–inlet water valve

"E" and "G" Control Board Without Harvest Pump Timer Operation Flow Chart, Continued

Thermostatic Bin Control Shutdown Sequence Flow Chart



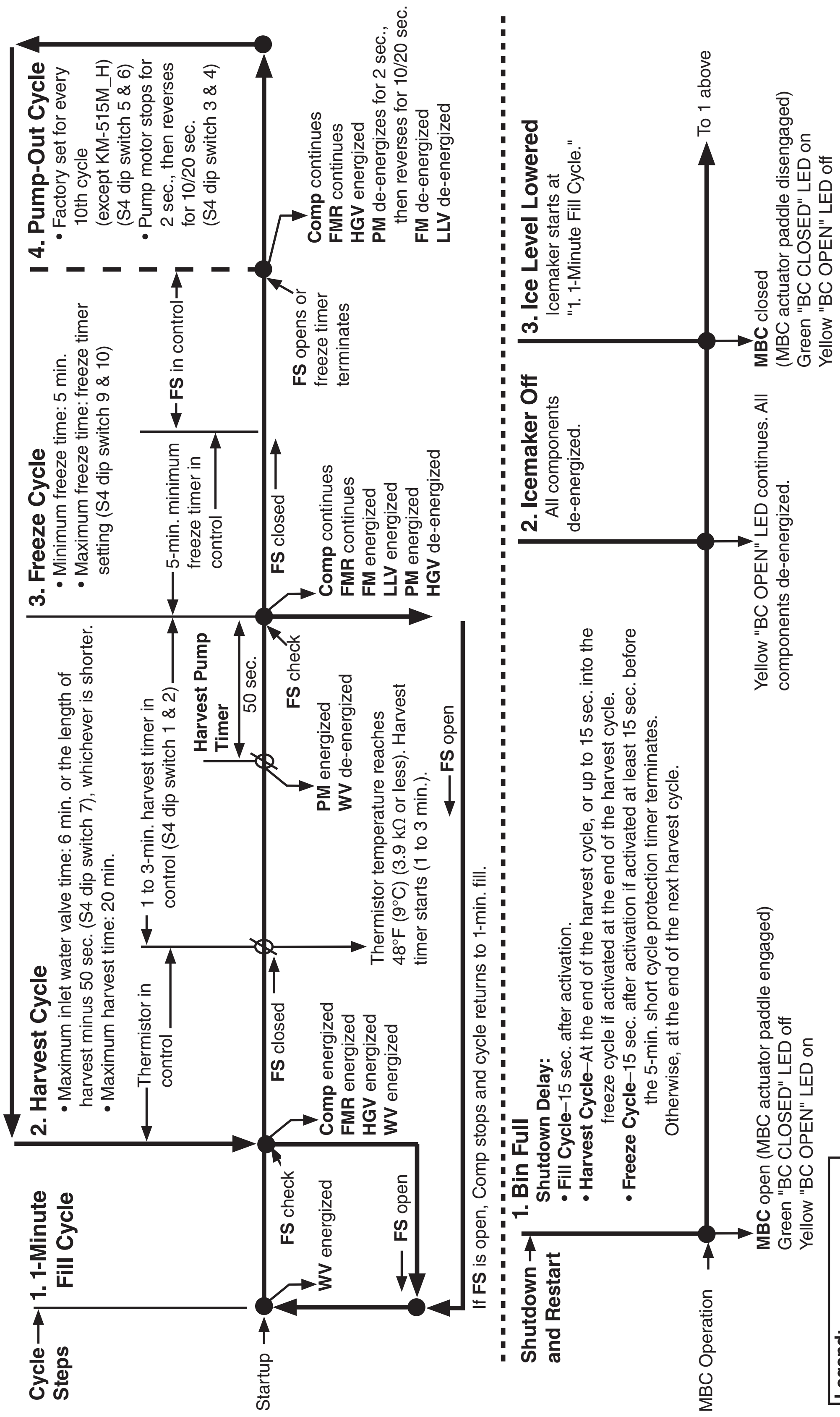
Mechanical Bin Control Shutdown Sequence Flow Chart



Legend:
MBC–mechanical bin control
TBC–themostatic bin control

2. "G" Control Board with Harvest Pump Timer Operation

"G" Control Board With Harvest Pump Timer Operation Sequence Flow Chart



Components Energized when the Control Switch is in the "WASH" Position

The "WASH" position on the control switch is used when cleaning and sanitizing the icemaker. When in the "WASH" position, power is supplied to the pump motor. With the cleaning valve closed, the cleaner and sanitizer flow over the outside of the evaporator plate assembly. With the cleaning valve open, the cleaner and sanitizer flow over both the outside and the inside of the evaporator plate assembly.
Note: Close the cleaning valve after cleaning and sanitizing are complete, otherwise the icemaker will not restart when the control switch is placed in the "ICE" position.

Legend:
Comp–compressor
FM–fan motor
FMR–fan motor-remote
FS–float switch
HGV–hot gas valve
LLV–liquid line valve
MBC–mechanical bin control
PM–pump motor
WV–inlet water valve

B. Service Diagnosis

⚠ WARNING

- The appliance should be diagnosed and repaired only by qualified service personnel to reduce the risk of death, electric shock, serious injury, or fire.
- Risk of electric shock. Control switch in "OFF" position does not de-energize all loads Use extreme caution and exercise safe electrical practices.
- Moving parts (e.g., fan blade) can crush and cut. Keep hands clear.
- Before servicing the appliance, move the control switch to the "OFF" position and turn off the power supply.
- **CHOKING HAZARD:** Ensure all components, fasteners, and thumbscrews are securely in place after the appliance is serviced. Make sure that none have fallen into the dispenser unit/ice storage bin.
- Make sure all food zones in the appliance and dispenser unit/ice storage bin are clean after service.

The diagnostic procedure is a sequence check that allows you to diagnose the electrical system and components. Before proceeding, check for correct installation, proper voltage per nameplate, and adequate water supply. Check CB using the steps in "II.C. Control Board Check." Check dip switch settings to assure that S4 dip switch 3, 4, 7, 8, 9, 10 and S5 dip switch 1 through 5 ("G" CB) are in the factory default position. S4 dip switch 1, 2, 5, 6 are cleaning adjustments and the settings are flexible. For factory default settings, see "III.C.1. Default Dip Switch Settings."

Note: • When checking high voltage (115VAC), always choose a white (W) neutral wire to establish a good neutral connection.

- On 3-phase models, the neutral (W) is provided through MT. To confirm a good neutral, check for 60VAC from white (W) neutral to ground (GND). If 60VAC is present, neutral is good. If 60VAC is not present, check 208-230VAC main power supply to MT. If 208-230VAC is present, check MT continuity.
- When checking voltage from the CB K1 connector (10 pin connector), pull CB K1 connector out slightly to allow room for multimeter test leads contact.

1) Turn off the power supply, then access the control box. Move the control switch to the "OFF" position. Clear any ice from BC.

2) Check that the 115VAC 10A fuse is good.

1. "E" and "G" Control Board without Harvest Pump Timer Diagnosis

3) **Power On**: Turn on the power supply, then move the control switch to the "ICE" position. A 5-sec. delay occurs.

- "E" Control Board: CB red "POWER OK" LED turns on.
- "G" Control Board: CB red "POWER OK" LED and green "BC CLOSED" LED turn on.

Note:
- CB red "POWER" LED remains on unless the 10.5VAC power supply is interrupted (K2 connector).
- Check CB using the steps in "II.C. Control Board Check."
- "G" CB: If yellow "BC OPEN" LED is on (indicating a full bin), check MBC. See "II.D.2. Mechanical Bin Control Check and Cleaning."

a) **Power On Diagnosis:** If CB red "POWER OK" LED is off, confirm closed TBC and 10A fuse is good. If TBC is open, remove ice from bulb and warm bulb in hand. If TBC does not close, replace TBC. See "II.D.1. Thermostatic Bin Control Check." Check for 115VAC at control switch #1 (BR) to neutral (W) then at control switch #2 (P) to neutral (W). If 115VAC is present on #1 (BR) and not on #2 (P), replace control switch. If 115VAC is present on control switch #2 (P), check for 115VAC at HPS (P) to neutral (W) then HPS (BK) to neutral (W). If 115VAC is present at HPS (P) and not at HPS (BK), HPS is open. See HPS Diagnosis below. If 115VAC is present at HPS (BK), check for 10.5VAC at CB K2 #1 red wire to CB K2 #2 red wire. If 10.5VAC is not present, check that the cleaning valve is closed and the interlock switch is closed. Next, check CT continuity. If open replace CT.

b) **HPS Diagnosis:** Check that the condenser coil is not clogged or restricted. Let refrigeration circuit pressures equalize. If HPS does not reset and pressures are equalized, replace HPS. If pressures are not equalized, reclaim refrigerant and diagnose refrigeration circuit restriction. Check that there are no restrictions in the refrigeration circuit.
Harvest Cycle: HGV, strainer, or check valve.
Freeze Cycle: FM, FMR, TXV, HM, LLV, strainer, check valve, drier, and damaged line set or fitting. Also confirm WRV opens in freeze cycle.

Confirm that the location meets installation requirements:

- The icemaker is not intended for outdoor use. Normal operating ambient temperature should be within 45°F to 100°F (7°C to 38°C).
- Allow 6" (15 cm) clearance at rear, sides, and top for proper air circulation and ease of maintenance and/or service should they be required.
- The appliance should not be located in a corrosive environment.

4) **1-Minute Fill Cycle – LED 4 is on.** WV energizes. After 1 min., CB checks for a closed FS. If FS is closed, harvest cycle begins. If harvest cycle begins (Comp, HGV, and FMR energize), continue to step 5. If FS is open, WV remains energized through additional 1-min. fill cycles until water enters the water tank and FS closes (low water safety protection during initial start up and at the end of each harvest). **Diagnosis:** Check that water enters the water tank. If not, check that the water supply line shut-off valve is open and screens or external filters are clear. Check for 115VAC at CB K1 #6 (O) to neutral (W). If 115VAC is not present, replace CB. If 115VAC is present, and WV does not energize, check for 115VAC at WV. If 115VAC is present, check coil continuity. If open, replace WV. If the water tank fills, but the appliance fails to start harvest (Comp energized), check for open FS. See "II.E. Float Switch Check and Cleaning." If FS is closed and CB fails to start the harvest cycle after 1 min., replace CB.

5) **Initial Harvest Cycle – LEDs 1, 4, and 2 are on.** WV continues. Comp, FMR, and HGV energize. CB monitors the warming of the evaporator via the thermistor located on the suction line. When the thermistor reaches 48°F (9°C), CB reads 3.9 kΩ from the thermistor and turns harvest termination over to the harvest timer (S4 dip switch 1 & 2). The harvest timer has settings of 60, 90, 120, and 180 sec. The pump-out timer (S4 dip switch 3 & 4) acts in place of the harvest timer during cycles with a pump-out (S4 dip switch 5 & 6). WV remains energized during harvest for a maximum of 6 min. or the length of harvest, whichever is shorter.

a) **Comp Diagnosis**: Check that evaporator is warming. If not, confirm that Comp energizes. If not, check for 115VAC at CB K1 #1 or #9 (V) to neutral (W). If 115VAC is not present, check for 115VAC at CB K1 #7 or #10 (BR) to neutral (W). If 115VAC is present at #7 or #10 (BR) and not at #1 or #9 (V), replace CB. If 115VAC is present, check for 115VAC at CR or MC solenoid. If 115VAC is present, confirm contacts are closed. If not, replace CR or MC. If CR or MC contacts are closed, check Comp external overload, Comp start and run capacitors, Comp start relay, and Comp motor winding.

b) **HGV Diagnosis**: If Comp is energized and evaporator is not warming, check that HGV energizes and opens. Check for 115VAC at CB K1 #2 (P) to neutral (W). If 115VAC is not present, replace CB. If 115VAC is present, check for 115VAC at HGV coil and check HGV coil continuity. Replace as needed.

c) **LLV Diagnosis**: Confirm that LLV is de-energized and closed (not bypassing). If energized, replace CB. If de-energized and bypassing, replace LLV.

d) **WRV Diagnosis**: Confirm WRV is not leaking by.

e) **Initial Harvest Cycle Termination Diagnosis**: When the thermistor reaches 48°F (9°C), CB reads 3.9 kΩ from the thermistor and turns harvest termination over to the harvest timer (S4 dip switch 1 & 2). Check discharge line temperature. For a thermistor check, see "II.F. Thermistor Check." If 1-min. fill cycle starts after harvest timer terminates, check that FS is clean and operating properly, see "II.E. Float Switch Check and Cleaning." If FS is closed, CB proceeds to the next cycle. If not, replace CB.

Note: The minimum total time allowed by CB for a complete harvest cycle is 2 min. Maximum harvest time allowed is 20 min.

***NOTICE!* On models with "G" control board and no harvest pump timer relays, S4 dip switch 7 must remain off. Otherwise, PM energizes in reverse direction the last 50 seconds of harvest and empties water from water tank.**

6) **Freeze Cycle – LED 1 is on.** Comp and FMR continue. PM, FM, and LLV energize. WV and HGV de-energize. Appliance is held in freeze by a 5-min. short cycle protection timer. After 5-min. timer terminates and FS opens, freeze cycle terminates.

a) **Freeze Cycle Diagnosis:** Confirm Comp and FMR continue. Confirm that PM, FM, and LLV energize. Confirm WRV opens. Next, confirm WV and HGV de-energize. During the first 5 min. of freeze, confirm evaporator is cooling. If not, confirm WV de-energized (not leaking by), HGV de-energized (not bypassing), LLV and FM energize, TXV and HM operate correctly, WRV opens, Comp is efficient, and refrigerant charge is correct. See "VIII.A. Specification Sheet" and "VIII.B. Performance Data."

b) **Comp and FMR Diagnosis**: If Comp and FMR de-energize once freeze begins, check that appliance has not shut off on HPS ("POWER OK" LED off). If so, check "3)b) HPS Diagnosis" above. If "POWER OK" LED is on, check for 115VAC at CB K1 #1 (V) or #9 (V) to neutral (W). If 115VAC is not present and LED 1 is on, replace CB. If 115VAC is present, check for 115VAC at CR or MC coil. If 115VAC is present, check CR or MC coil and contact continuity. Replace as needed. If CR or MC is ok, check Comp external overload, start relay, and start and run capacitors. Next, check Comp motor winding continuity. If Comp is energized but evaporator is not cooling, check for an inefficient Comp. See "VIII.B. Performance Data." If Comp is energized but FMR is not, check for 115VAC at the FMR junction box. If 115VAC is not present, check icemaker wiring connections. If 115VAC is present, check for voltage at condenser unit. If 115VAC is not present, check field wiring connections. If 115VAC is present, check FMR capacitor, motor winding, and fan blade for binding.

c) **WV and HGV Diagnosis**: If WV is energized, check for 115VAC at CB K1 #6 (O) to neutral (W). If 115VAC is present after PM energizes, replace CB. If 115VAC is not present, replace WV (bypassing). If HGV did not de-energize, check for 115VAC at CB K1 #2 (P) to neutral (W). If 115VAC is present after PM energizes, replace CB. If 115VAC is not present, replace HGV (bypassing).

d) **PM Diagnosis**: Confirm water is flowing over evaporator from PM and not WV. If PM de-energizes once freeze begins, check for 115VAC at CB K1 #4 (R) to neutral (W). If 115VAC is not present, replace CB. If 115VAC is present and PM is de-energized, check for 115VAC at control switch #5 (R) to neutral (W). If 115VAC is present at CB K1 #4 (R) and not at control switch #5 (R), check control switch continuity between #5 (R) and #4 (R). Replace as needed. If 115VAC is present at control switch #5 (R) to neutral (W), check PM capacitor and motor winding continuity.

e) **FM and LLV Diagnosis**: If FM or LLV does not energize, check for 115VAC at CB K1 #3 (BK) to neutral (W). If 115VAC is not present, replace CB. If 115VAC is present:
For FM, check capacitor, motor winding, and blade for binding.
For LLV, check coil voltage and continuity.

f) **Refrigerant Pressures, HM, and TXV Diagnosis**: If evaporator is still not cooling, check refrigerant pressures. See "VIII.B. Performance Data."
Next, check HM operation. If refrigeration pressures are above HM setpoint and HM is bypassing, replace HM. Check TXV for proper operation. Remove TXV bulb and hold it in your hand, refrigerant low-side pressure should rise, place TXV bulb in ice water, refrigerant low-side pressure should drop. A 10 to 15 pound pressure swing between warm and cold conditions indicate a good TXV. If a 10 to 15 pound swing is not present, replace TXV.

g) **WRV Diagnosis**: WRV is factory set and generally no adjustment is required.
If WRV fails to open in freeze, check for proper refrigerant pressures. See "VIII.B. Performance Data." If refrigerant pressures are correct and WRV does not open, adjust or replace as needed. See "IV.C. Water Regulating Valve Adjustment (water-cooled models)."

h) **Freeze Termination Diagnosis:** After 5 min. in freeze, disconnect CB K5 FS connector. 15 sec. later appliance should switch out of the freeze cycle (15 second delay after FS opens before terminating the freeze cycle). If appliance remains in freeze longer than 15 sec. after FS removed, replace CB. If appliance switches with FS removed but would previously not switch out of freeze with FS connected (long freeze - 3 beep alarm), see "II.E. Float Switch Check and Cleaning."

Note: Normal freeze cycle will last 20 to 40 min. depending on model and conditions. Cycle times and pressures should follow performance data provided in this manual. See "VIII.B. Performance Data."

i) **Short Freeze Cycle Diagnosis**: Confirm water tank fills and overflows during 1 min. fill and harvest cycles. If not, check water supply filters, shut-off valve, WV screen.
If water tank empties before 5 min. timer terminates and freeze cycle is short, check that CV is not leaking by (water flowing down the potable drain). If CV is leaking by, remove and clean CV, replace rubber seat and spring if necessary. If water tank is full, see "II.E. Float Switch Check and Cleaning" for erratic operating FS.

7) **Pump-Out Cycle – LEDs 1, 3, and 2 are on (10/20 second pump-out).** Timing of the first pump-out is dependent on CB. "E" CB first pump-out is after the first freeze cycle. "G" CB first pump-out is determined by S4 dip switch 5 & 6. See the table below.

"E" & "G" Control Board Settings			1st Pump-Out	
S4 Dip Switch Setting		Pump-Out Frequency	"E" Control Board	"G" Control Board
No. 5	No. 6			
OFF	OFF	Every cycle	After 1st freeze cycle	After 2nd freeze cycle
ON	OFF	Every 2 cycles		After 3rd freeze cycle
OFF	ON	Every 5 cycles		After 6th freeze cycle
ON	ON	Every 10 cycles		After 11th freeze cycle

Comp and FMR continue, HGV energizes. If S4 dip switch 3 & 4 are set to 3 off and 4 on, LED 4 turns on and WV energizes. FM and LLV de-energize. PM stops for 2 sec., then reverses for 10/20 sec. depending on pump-out timer (S4 dip switch 3 & 4) setting. When the pump-out timer terminates, pump-out is complete. The pump-out frequency control (S4 dip switch 5 & 6) is factory set, and generally no adjustment is required. However, the pump-out frequency control can be set to have a pump-out occur every cycle, or every 2, 5, or 10 cycles. For details, see "III.C.4. Pump-Out Frequency Control (S4 dip switch 5 & 6)."

Pump-Out Diagnosis: In the freeze cycle before pump-out (see table above), disconnect CB black K5 connector (FS connector) after 5 min. of freeze. Check that PM stops and re-starts and water is flowing down the drain through CV. If PM does not stop and re-start, check that CB LEDs 1, 3, and 2 are on. If not, replace CB. If LEDs 1, 3, and 2 are on and PM does not energize, check for 115VAC at CB K1 #5 (DBU) to neutral (W). If 115VAC is not present, replace CB. If 115VAC is present, make sure the drain line is not clogged and that CV is clean and operating properly.

Confirm FM and LLV de-energize. If FM or LLV is energized with LEDs 1, 3, and 2 on, replace CB.

8) **Normal Harvest Cycle** – Same as the initial harvest cycle. Return to step 5 above.
Note: Appliance continues to cycle until TBC or MBC is satisfied or power is turned off. The appliance always restarts at the 1-min. fill cycle.

9) **Shutdown**

a) **"E" Control Board: Thermostatic Bin Control (TBC):**
When the appliance is running, hold ice in contact with the thermostatic bulb. TBC switch opens within 10 sec., shutting down the appliance. TBC is factory set, and generally no adjustment is required. However, adjustment may be needed in some conditions, particularly at higher altitude locations. ***NOTICE!*** **Do not adjust S4 dip switch 7 out of the factory default position. This dip switch must be left in the factory default position or the appliance will not operate correctly. Diagnosis:** See "II.D.1. Thermostatic Bin Control Check and Cleaning."

b) **Mechanical Bin Control:**
See "II.D.2. Mechanical Bin Control Check and Cleaning."

Legend: **CB**–control board; **Comp**–compressor; **CV**–check valve; **FM**–fan motor; **FMR**–fan motor-remote; **FS**–float switch; **HGV**–hot gas valve; **HM**–headmaster (C.P.R.); **HPS**–high-pressure switch; **LLV**–liquid line valve; **MBC**–mechanical bin control; **PM**–pump motor; **TBC**–thermostatic bin control; **TXV**–thermostatic expansion valve; **WRV**–water regulating valve; **WV**–inlet water valve

2. "G" Control Board with Harvest Pump Timer Diagnosis

3) **Power On**: Turn on the power supply, then move the control switch to the "ICE" position. A 5-sec. delay occurs. CB red "POWER OK" LED and green "BC CLOSED" LED turn on. If yellow "BC OPEN" LED is on (indicating a full bin), check MBC. Move ice away from MBC actuator paddle. If yellow "BC OPEN" LED stays on, see "II.D.2. Mechanical Bin Control (MBC) Check."

Note:
- CB red "POWER OK" LED remains on unless the 10.5VAC power supply is interrupted (K2 connector).
- Check CB using the steps in "II.C. Control Board Check."
- Confirm CB green "BC CLOSED" LED is on. If CB yellow "BC OPEN" LED is on, remove ice from BC. If no ice is around BC and yellow "BC OPEN" LED is on, see "II.D.2. Mechanical Bin Control (MBC) Check."

a) **Power On Diagnosis:** If CB red "POWER OK" LED is off, confirm 10A fuse is good. Check for 115VAC at control switch #1 (BR) to neutral (W) then at control switch #2 (P) to neutral (W). If 115VAC is present on #1 (BR) and not on #2 (P), replace control switch. If 115VAC is present on control switch #2 (P), check for 115VAC at HPS (P) to neutral (W) then HPS (BK) to neutral (W). If 115VAC is present at HPS (P) and not at HPS (BK), HPS is open. See HPS Diagnosis below. If 115VAC is present at HPS (BK), check for 10.5VAC at CB K2 #1 red wire to CB K2 #2 red wire. If 10.5VAC is not present, check that the cleaning valve is closed and the interlock switch is closed. Next, check CT continuity. If open, replace CT.

b) **HPS Diagnosis:** Check that the condenser coil is not clogged or restricted. Let refrigeration circuit pressures equalize. If HPS does not reset and pressures are equalized, replace HPS. If pressures are not equalized, reclaim refrigerant and diagnose refrigeration circuit restriction. Check that there are no restrictions in the refrigeration circuit.
Harvest Cycle: HGV, strainer, or check valve.
Freeze Cycle: FM, FMR, TXV, WRV, HM, LLV, strainer, check valve, drier, and damaged line set or fitting.

Confirm that the location meets installation requirements:

- The appliance is not intended for outdoor use. Normal operating ambient temperature should be within 45°F to 100°F (7°C to 38°C).
- Allow 6" (15 cm) clearance at rear, sides, and top for proper air circulation and ease of maintenance and/or service should they be required.
- The appliance should not be located in a corrosive environment.

4) **1-Min. Fill Cycle – LED 4 is on.** WV and X11 relay energize. After 1 min., CB checks for a closed FS. If FS is closed, the harvest cycle begins. If harvest cycle begins (Comp, HGV, FMR energized), continue to step 5a. If FS is open, WV remains energized through additional 1-min. fill cycles until water enters the water tank and FS closes (low water safety protection during initial start up and at the end of each harvest). **Diagnosis:** Check that water enters the water tank. If not, check that the water supply line shut-off valve is open and screens or external filters are clear. Check for 115VAC at CB K1 #6 (O) to neutral (W). If 115VAC is not present, replace CB. If 115VAC is present, and WV does not energize, check for 115VAC at WV. If 115VAC is present, check coil continuity. If open, replace WV. If the water tank fills, but the appliance fails to start harvest (Comp energized), check for open FS. See "II.E. Float Switch Check and Cleaning." If FS is closed and CB fails to start the harvest cycle after 1 min., replace CB.

5a) **Initial Harvest Cycle – LEDs 1, 4, and 2 are on.** WV and X11 relay continue. Comp, FMR, HGV, and X10 relay energize. CB monitors the warming of the evaporator via the thermistor located on the suction line. When the thermistor reaches 48°F (9°C), CB reads 3.9 kΩ from the thermistor and turns harvest termination over to the harvest timer (S4 dip switch 1 & 2). The harvest timer has settings of 60, 90, 120, and 180 sec. The pump-out timer (S4 dip switch 3 & 4) acts in place of the harvest timer during cycles with a pump-out (S4 dip switch 5 & 6). WV and X11 relay are energized during harvest for a maximum of 6 min. or the length of harvest minus 50 sec., whichever is shorter. 50 sec. before harvest terminates, PM energizes. See step 5b below.

a) **Comp Diagnosis**: Check that evaporator is warming. If not, confirm that Comp energizes. If not, check for 115VAC at CB K1 #1 or #9 (V) to neutral (W). If 115VAC is not present, check for 115VAC at CB K1 #7 or #10 (BR) to neutral (W). If 115VAC is present at #7 or #10 (BR) and not at #1 or #9 (V), replace CB. If 115VAC is present, check for 115VAC at CR or MC solenoid. If 115VAC is present, confirm contacts are closed. If not, replace CR or MC. If CR or MC contacts are closed, check Comp external overload, Comp start and run capacitors, Comp start relay, and Comp motor winding. If Comp is energized and evaporator is not warming, check that HGV energizes and opens. Check for 115VAC at CB K1 #2 (P) to a neutral (W). If 115VAC is not present and LED 2 is on, replace CB. If 115VAC is present, check coil voltage and continuity. Replace as needed. Confirm that LLV is de-energized and closed (not bypassing). If energized, replace CB. If de-energized and bypassing, replace LLV. Confirm WRV is not leaking by. If evaporator is warming, PM energizes for the last 50 sec. of harvest.

b) **HGV Diagnosis**: If Comp is energized and evaporator is not warming, check that HGV energizes and opens. Check for 115VAC at CB K1 #2 (P) to neutral (W). If 115VAC is not present, replace CB. If 115VAC is present, check for 115VAC at HGV coil and check HGV coil continuity. Replace as needed.

c) **LLV Diagnosis**: Confirm that LLV is de-energized and closed (not bypassing). If energized, replace CB. If de-energized and bypassing, replace LLV.

d) **WRV Diagnosis**: Confirm WRV is not leaking by.

5b) **Harvest Pump Timer – LEDs 1, 3, and 2 are on.** When the thermistor reaches 48°F (9°C), CB reads 3.9 kΩ from the thermistor and turns harvest termination over to the harvest timer (S4 dip switch 1 & 2). 50 sec. before the harvest timer terminates, LED 3 turns on and PM energizes. Comp, FMR, HGV, and X10 relay continue. LED 4 turns off, WV and X11 relay de-energize.

Diagnosis: Place a thermometer on the suction line next to the thermistor. Has it warmed to 48°F (9°C) or warmer? Confirm thermistor status. See "II.F. Thermistor Check." If the thermistor reading is in proper range, dip switch 7 is on, and PM does not energize 50 sec. before harvest terminates, replace CB. If WV continues, check for 115VAC at CB K1 #6 (O). If 115VAC is present, and LED 4 is off, replace CB. If LED 3 is on and PM is not energized, check for 115VAC at CB K1 #5 (DBU). If 115VAC is not present, replace CB. If 115VAC is present and PM is not energized, check for 115VAC at X10 relay terminal #7 (Y) to neutral (W). If 115VAC is not present, check for 115VAC at X10 relay terminal #3 (P) to neutral (W) and X10 relay terminal #5 (Y) to neutral (W). If 115VAC is present on terminal #3 (P) and not on terminal #5 (Y), replace X10 relay. If 115VAC is present on X10 relay terminal #7 (Y) and PM is not energized, check for 115VAC at X10 relay terminal #4 (R) to neutral (W) and terminal #6 (DBU) to neutral (W). If 115VAC is present on terminal #6 (DBU) and not on terminal #4 (R), replace X10 relay. If 115VAC is present on X10 relay terminal #4 (R), check control switch contact continuity between terminals #4 (R) and #5 (R). If contacts are open, replace control switch. If contacts are closed and 115VAC is present between control switch terminal #5 (R) and neutral (W), check PM capacitor and motor winding continuity.

5c) **Initial Harvest Cycle Termination Diagnosis**: When the thermistor reaches 48°F (9°C), CB reads 3.9 kΩ from the thermistor and turns harvest termination over to the harvest timer (S4 dip switch 1 & 2). Check discharge line temperature. For a thermistor check, see "II.F. Thermistor Check." If 1-min. fill cycle starts after harvest timer terminates, check that FS is clean and operating properly, see "II.E. Float Switch Check and Cleaning." If FS is closed, CB proceeds to the next cycle. If not, replace CB.

Note: The minimum total time allowed by CB for a complete harvest cycle is 2 min. Maximum harvest time allowed is 20 min.

NOTICE! **S4 dip switch 7 must remain on. Otherwise, PM will not energize during the last 50 sec. of harvest.**

6) **Freeze Cycle – LED 1 is on.** Comp, FMR, and PM continue. FM and LLV energize. HGV and X10 relay de-energize. Appliance is held in freeze by a 5-min. short cycle protection timer. After 5-min. timer terminates and FS opens, freeze cycle terminates. Note: PM power supply switches from CB K1 #5 (DBU) in harvest to K1 #4 (R) in freeze.

a) **Freeze Cycle Diagnosis**: Confirm Comp, FMR, and PM continue. Confirm that FM and LLV energize. Confirm WRV opens. Next, confirm HGV and X10 relay de-energize. During the first 5 min. of freeze, confirm evaporator is cooling. If not, confirm WV de-energized (not leaking by), HGV de-energized (not bypassing), LLV and FM energize, TXV and HM operate correctly, WRV opens, Comp is efficient, and refrigerant charge is correct. See "VIII.A. Specification Sheet" and "VIII.B. Performance Data."

b) **Comp and FMR Diagnosis**: If Comp and FMR de-energize once freeze begins, check that appliance has not shut off on HPS ("POWER OK" LED off). If so, check "3)b) HPS Diagnosis" above. If "POWER OK" LED is on, check for 115VAC at CB K1 #1 (V) or #9 (V) to neutral (W). If 115VAC is not present and LED 1 is on, replace CB. If 115VAC is present, check for 115VAC at CR or MC coil. If 115VAC is present, check CR or MC coil and contact continuity. Replace as needed. If CR or MC is okay, check Comp start relay and start and run capacitors. Next, check Comp motor winding continuity. If Comp is energized but evaporator is not cooling, check for an inefficient Comp. See "VIII.B. Performance Data." If Comp is energized but FMR is not, check for 115VAC at the FMR junction box. If 115VAC is not present, check icemaker wiring connections. If 115VAC is present, check for voltage at condenser unit. If 115VAC is not present, check field wiring connections. If 115VAC is present, check FMR capacitor, motor winding, and fan blade for binding.

c) **WV and HGV Diagnosis**: If WV is energized, check for 115VAC at CB K1 #6 (O) to neutral (W). If 115VAC is present after PM energizes in harvest cycle, replace CB. If 115VAC is not present, replace WV (bypassing). If HGV did not de-energize at the end of harvest, check for 115VAC at CB K1 #2 (P) to neutral (W). If 115VAC is present 50 sec. after PM energizes, replace CB. If 115VAC is not present, replace HGV (bypassing).

d) **PM Diagnosis**: Confirm water is flowing over evaporator from PM and not WV. If PM de-energizes once freeze begins, check for 115VAC at CB K1 #4 (R) to neutral (W). If 115VAC is not present, replace CB. If 115VAC is present and PM is de-energized, check for 115VAC at control switch #5 (R) to neutral (W). If 115VAC is present at CB K1 #4 (R) and not at control switch #5 (R), check control switch continuity between #5 (R) and #4 (R). Replace as needed. If 115VAC is present at control switch #5 (R) to neutral (W), check PM capacitor and motor winding continuity.

e) **FM and LLV Diagnosis**: If FM or LLV does not energize, check for 115VAC at CB K1 #3 (BK) to neutral (W). If 115VAC is not present, replace CB. If 115VAC is present:
For FM, check capacitor, motor winding, and blade for binding.
For LLV, check coil voltage and continuity.

f) **Refrigerant Pressures, HM, and TXV Diagnosis**: If evaporator is still not cooling, check refrigerant pressures. See "VIII.B. Performance Data."
Next, check HM operation. If refrigeration pressures are above HM setpoint and HM is bypassing, replace HM. Check TXV for proper operation. Remove TXV bulb and hold it in your hand, refrigerant low-side pressure should rise, place TXV bulb in ice water, refrigerant low-side pressure should drop. A 10 to 15 pound pressure swing between warm and cold conditions indicate a good TXV. If a 10 to 15 pound swing is not present, replace TXV.

g) **WRV Diagnosis**: WRV is factory set and generally no adjustment is required.
If WRV fails to open in freeze, check for proper refrigerant pressures. See "VIII.B. Performance Data." If refrigerant pressures are correct and WRV does not open, adjust or replace as needed. See "IV.C. Water Regulating Valve Adjustment (water-cooled models)."

h) **Freeze Termination Diagnosis:** After 5 min. in freeze, disconnect CB K5 FS connector. 15 sec. later appliance should switch out of the freeze cycle (15 second delay after FS opens before terminating the freeze cycle). If appliance remains in freeze longer than 15 sec. after FS removed, replace CB. If appliance switches with FS removed but would previously not switch out of freeze with FS connected (long freeze - 3 beep alarm), see "II.E. Float Switch Check and Cleaning."

Note: Normal freeze cycle will last 20 to 40 min. depending on model and conditions. Cycle times and pressures should follow performance data provided in this manual. See "VIII.B. Performance Data."

i) **Short Freeze Cycle Diagnosis**: Confirm water tank fills and overflows during 1 min. fill and harvest cycles. If not, check water supply filters, shut-off valve, WV screen. If water tank empties before 5 min. timer terminates and freeze cycle is short, check that CV is not leaking by (water flowing down the potable drain). If CV is leaking by, remove and clean CV, replace rubber seat and spring if necessary. If water tank is full, see "II.E. Float Switch Check and Cleaning." for erratic operating FS.

7) **Pump-Out Cycle – LEDs 1, 3, and 2 are on (10/20 second pump-out).** Timing of the first pump-out is determined by S4 dip switch 5 & 6. See the table below.

"G" Control Board Settings			
S4 Dip Switch Setting		**Pump-Out Frequency**	**"G" Control Board**
No. 5	**No. 6**		
OFF	OFF	Every cycle	After 2nd freeze cycle
ON	OFF	Every 2 cycles	After 3rd freeze cycle
OFF	ON	Every 5 cycles	After 6th freeze cycle
ON	ON	Every 10 cycles	After 11th freeze cycle

Comp and FMR continue, HGV energizes. If S4 dip switch 3 & 4 are set to 3 off and 4 on, LED 4 turns on and WV and X11 relay energize, energizing X10 relay. ***NOTICE!* S4 dip switch 3 & 4 must not be set to 3 off and 4 on. Otherwise, PM will rotate in freeze cycle direction instead of pump-out direction.** FM and LLV de-energize. PM stops for 2 sec., then reverses for 10/20 sec. depending on pump-out timer (S4 dip switch 3 & 4) setting. When the pump-out timer terminates, pump-out

is complete. The pump-out frequency control (S4 dip switch 5 & 6) is factory set, and generally no adjustment is required. However, the pump-out frequency control can be set to have a pump-out occur every cycle, or every 2, 5, or 10 cycles. For details, see "III.C.4. Pump-Out Frequency Control (S4 dip switch 5 & 6)."

Pump-Out Diagnosis: In the freeze cycle before pump-out (see table above), after 5 min. of freeze disconnect CB black K5 connector (FS connector). Check that PM stops and re-starts and that PM rotation is correct (water flowing down the drain through CV). If PM does not stop and re-start, check that CB LEDs 1, 3, and 2 are on. If not, replace CB. If LEDs 1, 3, and 2 are on and PM does not energize, check for 115VAC at CB K1 #5 (DBU) to neutral (W). If 115VAC is not present, replace CB. If 115VAC is present, check that X10 relay is de-energized. If not, check X11 relay status. If X11 relay is energized, replace CB. If X11 relay is de-energized and X10 relay is energized, replace X11 relay (contacts sticking). If X10 relay is de-energized, check for 115VAC at terminal #6 (DBU) to neutral (W) and terminal #2 (DBU) to neutral (W). If 115VAC is present on terminal #6 (DBU) and not on terminal #2 (DBU), replace X10 relay. If PM is energized and rotating in pump-out rotation, make sure the drain line is not clogged and that CV is clean and operating properly.

Confirm FM and LLV de-energize. If FM or LLV are energized with LEDs 1, 3, and 2 on, replace CB.

8) **Normal Harvest Cycle** – Same as the initial harvest cycle. Return to step 5a) above.

Note: Appliance continues to cycle until MBC is satisfied or power is switched off. The appliance always restarts at the 1-min. fill cycle.

9) **Shutdown**

Mechanical Bin Control:

See "II.D.2. Mechanical Bin Control Check."

Legend: **CB**–control board; **Comp**–compressor; **CV**–check valve; **FM**–fan motor; **FMR**–fan motor remote; **FS**–float switch; **HGV**–hot gas valve; **HM**–headmaster (C.P.R.); **HPS**–high-pressure switch; **LLV**–liquid line valve; **MBC**–mechanical bin control; **PM**–pump motor; **TXV**–thermostatic expansion valve; **WRV**–water regulating Valve; **WV**–inlet water valve

C. Control Board Check

Before replacing CB that does not show a visible defect and that you suspect is bad, always conduct the following check procedure. This procedure will help you verify your diagnosis.

Alarm Reset: If CB is in alarm (beeping), press the "ALARM RESET" button on CB while CB is beeping. **WARNING! Risk of electric shock. Care should be taken not to touch live terminals.** Once reset, the icemaker starts at the 1-minute fill cycle. For audible alarm information, see "III.B. LED Lights and Audible Alarm Safeties."

1) Check the dip switch settings to assure that S4 dip switch 3, 4, 7, 8, 9, 10 and S5 dip switch 1 through 5 ("G" CB) are in the factory default position. S4 dip switch 1, 2, 5, 6 are cleaning adjustments and the settings are flexible. For factory default settings, see "III.C.1. Default Dip Switch Settings."

2) Move the control switch to the "ICE" position. If the red "POWER OK" LED is on, control voltage is good, continue to step 3. If the "POWER OK" LED is off, check CT secondary circuit. CT output is 10.5VAC at 115VAC primary input. If the secondary circuit has proper voltage and the red LED is off, replace CB.

   If the secondary circuit does not have proper voltage, check CT primary circuit. Check for 115VAC at CB K1 connector pin #10 (BR) to neutral (W) for 115VAC. Always choose a white (W) neutral wire to establish a good neutral connection when checking voltages. For additional checks, see "II.G.1. No Ice Production."

3) The "OUTPUT TEST" button provides a relay sequence test. Make sure the control switch is in the "ICE" position, then press the "OUTPUT TEST" button. For the correct lighting sequence, see the table below. Note that the order of the LEDs from the outer edge of the control board is 1, 4, 3, 2. Components (e.g., compressor) cycle during the test.

Control Board	Correct LED Lighting Sequence
"E"	2, 3, 4, 1
"G"	1, 4, 3, 2

   Following the test, the icemaker begins operation at the 1-minute fill cycle for both "E" and "G" control boards. If the LEDs do not light as described above, replace CB.

4) To verify voltage output from CB to the components, slide the CB K1 connector out far enough to allow multimeter lead contact. With the icemaker in the cycle to be tested, check output voltage from the corresponding pin on CB K1 connector to a neutral (W wire). If output voltage is not found and the appropriate LED is on, replace CB.

Legend: **CB**–control board; **CT**–control transformer

D. Bin Control Check

1. Thermostatic Bin Control Check

TBC shuts down the icemaker within 10 sec. when ice contacts the thermostatic bulb, regardless of the cycle at activation.

NOTICE
When the ambient temperature is below 45°F (7°C), TBC opens and shuts down the appliance even if the ice storage bin is empty. When BC is set in the prohibited range, the appliance operates continuously even if the ice storage bin is filled with ice. Setting in the prohibited range may result in severe damage to the appliance.

TBC is factory set, and generally no adjustment is required. However, adjustment may be needed in some conditions, particularly at higher altitude locations.

Note: If used on "G" control boards, a jumper (4A4883G01) must be placed on the CB red K4 connector. Otherwise, CB yellow "BC OPEN" LED is on and appliance will not start.

To check TBC, follow the steps below.

1) Turn off the power supply.
2) Remove the front panel, then move the control switch to the "OFF" position.
3) Remove the control box cover and base cover, then clear any ice away from TBC bulb.
4) Disconnect TBC wires from TBC switch.
5) Hold your hand around the bulb to warm it up.
6) Check for continuity across TBC switch. If closed, continue to step 6. If open, adjust or replace TBC.
7) With the multimeter test leads still in place, hold ice on TBC bulb to lower the temperature. Within 10 sec., TBC switch should open. If it remains closed, adjust or replace TBC.

Legend: **TBC**–thermostatic bin control

2. Mechanical Bin Control Check and Cleaning

a) Mechanical Bin Control Check

This appliance uses a lever-actuated proximity switch to control the ice level in the storage bin. No adjustment is required.

To check TBC, follow the steps below.

1) Turn off the power supply.
2) Remove the front panel, then move the control switch to the "OFF" position.
3) Remove the control box cover and base cover, then clear any ice away from MBC.
4) Check MBC wire harness connections. See Fig. 1.
5) Disconnect MBC connector from CB K4 connector.
6) Check for continuity across the wires of MBC connector. When the actuator paddle is not engaged, MBC switch is closed. If open, check that the wire harness connector is properly connected and that the actuator paddle is not sticking. Clean if necessary. See "II.D.2.b) Mechanical Bin Control Cleaning." If MBC switch still reads open, replace MBC.

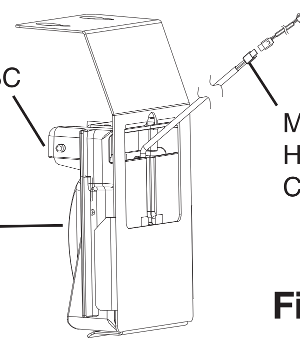


Fig. 1

Model Shown: KM-901M_H/3

7) Press and hold the actuator paddle; check for continuity across the wires of MBC connector. When the actuator paddle is engaged, MBC switch is open. If closed, check that the actuator paddle is not restricted. Clean if necessary. See "II.D.2.b) Mechanical Bin Control Cleaning." If MBC switch still reads closed, replace MBC.
8) Reconnect MBC connector to CB K4 connector, then move the control switch to the "ICE" position. Turn on the power supply.
9) Check that CB green "BC CLOSED" LED is on.
10) Allow the icemaker to cycle on. Press and hold the actuator paddle. CB yellow "BC OPEN" LED should turn on and the icemaker should shut down according to the chart below. If it does not, replace CB.

Cycle at Mechanical Bin Control Activation	Shutdown
Fill Cycle	15 sec. after activation.
Harvest Cycle	At the end of the harvest cycle, or up to 15 sec. into the freeze cycle if activated at the end of the harvest cycle.
Freeze Cycle	15 sec. after activation if activated at least 15 sec. before the 5-min. short cycle protection timer terminates. Otherwise, at the end of the next harvest cycle.

Legend: **MBC**–mechanical bin control; **CB**–control board

b) Mechanical Bin Control Cleaning

Scale may build up on MBC. Scale can cause the actuator paddle and magnet to stick. In this case, MBC should be cleaned.

⚠ WARNING
CHOKING HAZARD: Ensure all components, fasteners, and thumbscrews are securely in place after the icemaker is serviced. Make sure that none have fallen into the dispense unit/ice storage bin.

1) Turn off the power supply.
2) Remove the front panel and base cover, then move the control switch to the "OFF" position.
3) Clear any ice away from MBC.
4) Disconnect MBC connector from CB K4 connector, then remove MBC from the icemaker.
5) Remove the actuator paddle from the switch mount. See Fig. 2.
6) Wipe down MBC with a mixture of 1 part of Hoshizaki "Scale Away" and 25 parts of warm water. Rinse the parts thoroughly with clean water.
7) Reassemble MBC and replace it in its correct position.
   Note: If the magnet was removed for cleaning, be sure to replace it in its correct position.
8) Reconnect MBC connector to CB K4 connector, then move the control switch to the "ICE" position.
9) Replace the control box cover and base cover in their correct positions.
10) Turn on the power supply to start the automatic icemaking process.
11) Replace the front panel in its correct position.

Legend: **MBC**–mechanical bin control

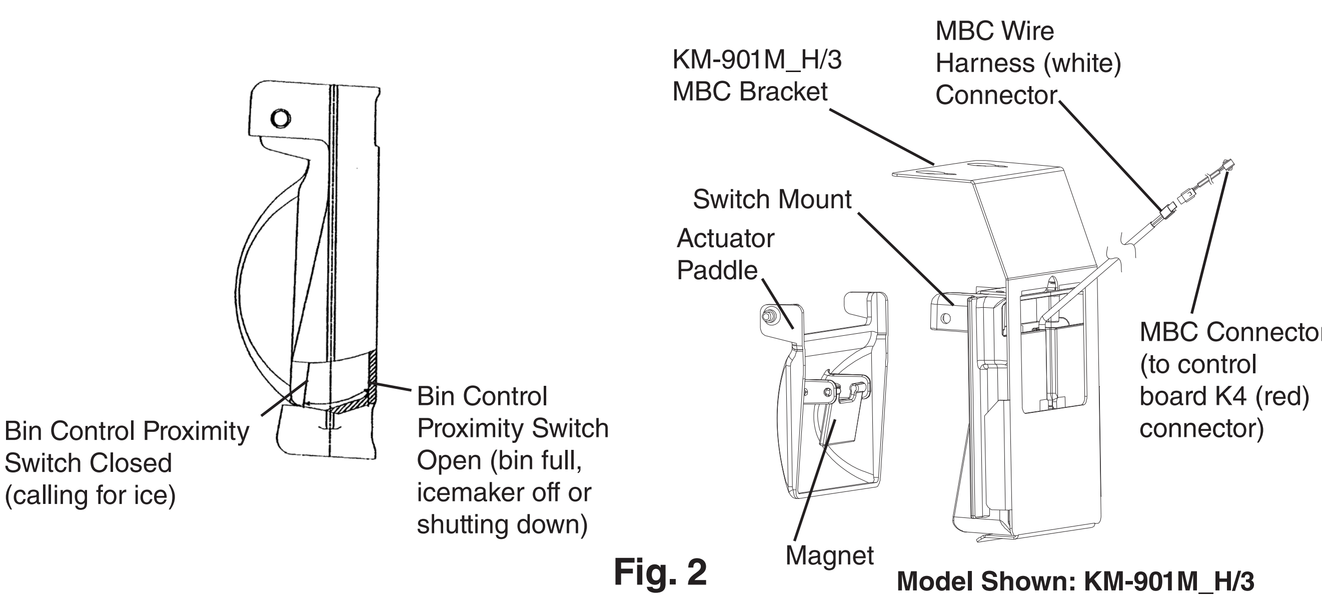


Fig. 2

Model Shown: KM-901M_H/3

E. Float Switch Check and Cleaning

FS is used to determine that there is sufficient water in the water tank after the 1-min. fill cycle and after each harvest cycle. FS is also used to determine that the appropriate volume of water has been converted into ice before switching out of the freeze cycle. No adjustment is required.

1. Float Switch Check

To check FS, follow the steps below.

1) Turn off the power supply.

2) Remove the front panel, then move the control switch to the "OFF" position.

3) Remove the base cover, then disconnect one end of the pump tubing to drain the water tank. See Fig. 3. After the water tank has drained, reconnect the pump tubing.

4) Remove the control box cover.

5) Disconnect FS connector from CB K5 connector.

6) Check for continuity across FS leads. With the water tank empty, FS should be open. If open, continue to step 7. If closed, follow the steps in "II.E.2. Float Switch Cleaning." After cleaning FS, check it again. Replace if necessary.

7) Reconnect FS connector to CB K5 connector, then replace the control box cover in its correct position.

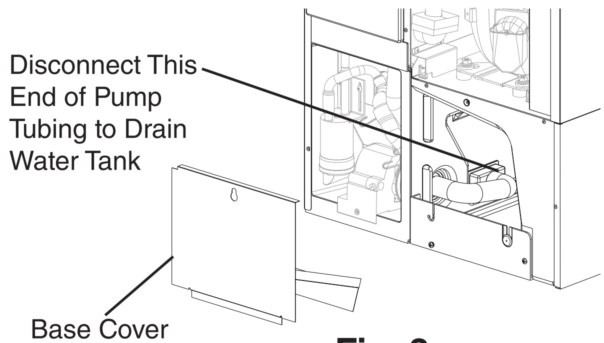


Fig. 3

8) Move the control switch to the "ICE" position. Replace the front panel in its correct position, then turn on the power supply. After 1 min., the 1-min. fill cycle should end and the initial harvest cycle should begin. If the initial harvest cycle begins, FS is good and the check is complete. If the initial harvest cycle does not begin, continue to step 9.

9) Turn off the power supply.

10) Remove the front panel. Move the control switch to the "OFF" position.

11) Remove the control box cover.

12) Disconnect FS connector from CB K5 connector.

13) Check for continuity across FS leads. With the water tank full, FS should be closed. If FS is closed and the icemaker will not switch from the 1-min. fill cycle to the initial harvest cycle, replace CB.

If FS is open, confirm that the water tank is full. If the water tank is not full, check the water supply, water filters, and inlet water valve. If the water tank is full, follow the steps in "II.E.2. Float Switch Cleaning." After cleaning FS, check it again. Replace if necessary.

Legend: **CB**–control board; **FS**–float switch

2. Float Switch Cleaning

Depending on local water conditions, scale may build up on FS. Scale on the switch can cause the float to stick. In this case, FS should be cleaned.

1) Turn off the power supply.

2) Remove the front panel, then move the control switch to the "OFF" position.

3) Remove the base cover, then disconnect one end of the pump tubing to drain the water tank. See Fig. 3. After the water tank has drained, reconnect the pump tubing.

4) Disconnect the vent tube and the flush tube from the top of FS, then remove FS assembly and remove the rubber boot from the bottom of FS assembly. See Fig. 4.

5) Remove the retainer rod from the bottom of FS housing, then remove the float. Be careful not to bend the retainer rod excessively when removing it.

6) Wipe down FS housing, shaft, float, and retainer rod with a mixture of 1 part Hoshizaki "Scale Away" and 25 parts warm water. Clean the inside of the rubber boot and hose with cleaning solution. Rinse the parts thoroughly with clean water.

7) Reassemble FS assembly and replace it and the rubber boot in their correct positions. Reconnect the vent tube and the flush tube.

8) Replace the base cover in its correct position.

9) Move the control switch to the "ICE" position.

10) Replace the front panel in its correct position.

11) Turn on the power supply to start the automatic icemaking process.

Legend: **CB**–control board; **FS**–float switch

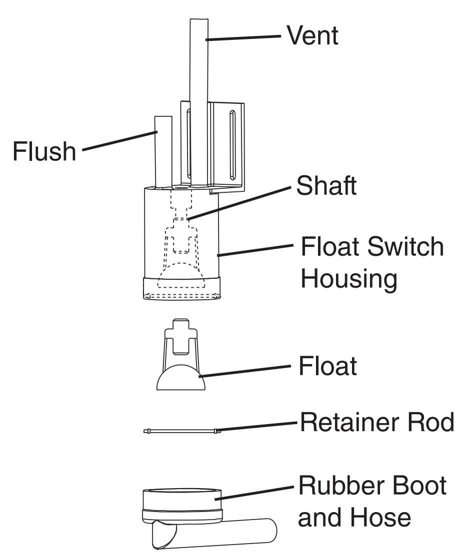


Fig. 4

F. Thermistor Check

To check thermistor resistance, follow the steps below.

1) Turn off the power supply.
2) Remove the front panel. Move the control switch to the "OFF" position.
3) Remove the control box cover.
4) Remove the thermistor from the refrigerant tubing.
5) Immerse the thermistor sensor portion in a glass containing ice and water for 2 or 3 min.
6) Disconnect the thermistor connector from CB K3 connector and check the resistance between thermistor leads. Normal range is 4.7 to 6.2 kΩ. If outside the normal range, replace the thermistor. See "IV.B. Component Service Information." If within the normal range, continue to the next step.
7) Replace the thermistor in its correct position. See "IV.B. Component Service Information."
8) Reconnect the thermistor connector to CB K3 connector.
9) Replace the control box cover in its correct position.
10) Move the control switch to the "ICE" position.
11) Replace the front panel in its correct position.
12) Turn on the power supply.
13) Once the harvest cycle starts (Comp energizes), begin timing the harvest cycle.
14) The harvest timer and harvest cycle should terminate within 2 to 5 min. If the harvest cycle does not terminate within 2 to 5 min., replace CB.

Legend: **CB**–control board; **Comp**–compressor

G. Diagnostic Tables

1. No Ice Production

No Ice Production - Possible Cause	
1. Power Supply	a) Off, blown fuse, or tripped breaker.
	b) Not within specifications.
2. Main Transformer (3 phase and KM-650MWH-M only) (208/230VAC/115VAC)	a) Voltage tap switch not set to proper voltage.
	b) Coil winding open or shorted.
3. Fuse (Control Box)	a) Blown.
4. Thermostatic Bin Control See "II.D. Bin Control Check"	a) Tripped with bin filled with ice.
	b) Ambient temperature too cool.
	c) Set too warm.
	d) Bulb out of position.
	e) Open contacts, defective.
5. Control Switch	a) In "OFF" or "WASH" position.
	b) Bad contacts.
6. High-Pressure Switch	a) Dirty condenser.
	b) Fan motor not operating.
	c) Refrigerant overcharged.
	d) Bad contacts.
	e) Refrigerant lines or components plugged.
7. Control Transformer (115VAC/10.5VAC)	a) Coil winding open or shorted.
8. Control Board See "II.C. Control Board Check"	a) In alarm.
	b) Yellow "BC OPEN" LED on (bin full) ("G" control board).
	c) Defective.
9. Mechanical Bin Control See "II.D. Bin Control Check"	a) Tripped with bin filled with ice.
	b) Actuator does not move freely.
	c) Defective.
10. Water Supply	a) Water supply off or improper water pressure.
	b) External water filters clogged.
11. Inlet Water Valve	a) Screen or orifice clogged.
	b) Coil winding open.
	c) Water valve open in freeze cycle.
12. Float Switch See "II.E. Float Switch Check and Cleaning"	a) Float does not move freely.
	b) Defective.
13. Compressor	a) Compressor relay/magnetic contactor contacts bad or coil winding open.
	b) Start capacitor or run capacitor defective (single phase).
	c) Internal protector open.
	d) Start relay contacts bad or coil winding open (single phase).
	e) Compressor defective.
14. Hot Gas Valve	a) Closed in harvest cycle.
	b) Open in freeze cycle.

No Ice Production - Possible Cause	
15. Thermistor See "II.F. Thermistor Check"	a) Loose, disconnected, or defective.
16. Pump Motor	a) Motor winding open.
	b) Bearing worn out or locked rotor.
	c) Defective capacitor.
	d) Mechanical seal worn out.
17. Thermostatic Expansion Valve	a) Bulb loose.
	b) Operating erratically.
18. Liquid Line Valve	a) Closed in freeze cycle.
	b) Open in harvest cycle.
19. Fan Motor	a) Motor winding open.
	b) Bearing worn out or locked rotor.
	c) Defective capacitor.
20. Water System	a) Water leaks causing short freeze time.

2. Freeze-Up

Defrost and clean the icemaker prior to diagnosing freeze-up. Fill out a freeze-up checklist. See the Hoshizaki America Technician's Pocket Guide or contact your local distributor for a copy of the freeze-up checklist.

Freeze-Up - Possible Cause	
Harvest Cycle	
1. Evaporator	a) Scaled up.
	b) Damaged.
2. Cube Guides	a) Out of position.
	b) Damaged.
3. Spray Tubes and/or Spray Guides	a) Dirty.
	b) Out of position.
4. Water Supply	a) Low water pressure.
	b) External water filters clogged.
	c) Insufficient water line size. Minimum 1/4" Nominal ID (6 mm Nominal OD in the EU) copper water tubing or equivalent.
5. Inlet Water Valve	a) Screen or orifice clogged.
	b) Defective.
6. Float Switch See "II.E. Float Switch Check and Cleaning"	a) Dirty, sticking.
	b) Defective.
7. Refrigerant Charge	a) Low.
8. Control Board See "III.C. Settings and Adjustments" and "II.C. Control Board Check"	a) Harvest timer (S4 dip switch 1 & 2) set too short.
	b) Harvest pump timer (S4 dip switch 7) not in factory default position ("G" control board).
	c) Defective.
9. Bin Control See "II.D. Bin Control Check"	a) Actuator does not move freely.
10. Thermistor See "II.F. Thermistor Check"	a) Loose, disconnected, or defective.

Freeze-Up - Possible Cause	
11. Thermostatic Expansion Valve	a) Defective.
12. Hot Gas Valve	a) Closed or restricted.
13. Liquid Line Valve	a) Open.
Freeze Cycle	
1. Evaporator	a) Scaled up.
	b) Damaged.
2. Spray Tubes and/or Spray Guides	a) Dirty.
	b) Out of position.
3. Refrigerant Charge	a) Low.
4. Control Board See "II.C. Control Board Check"	a) Freeze timer (S4 dip switch 9 & 10) set incorrectly.
	b) Defective.
5. Inlet Water Valve	a) Leaking by.
6. Float Switch See "II.E. Float Switch Check and Cleaning"	a) Float does not move freely.
	b) Defective.
7. Pump Motor	a) RPM too slow.
	b) Impeller damaged.
8. Thermostatic Expansion Valve	a) Bulb loose or defective.
9. Liquid Line Valve	a) Restricted.
10. Headmaster (C.P.R.) (remote models)	a) Not bypassing.

3. Low Ice Production

Low Ice Production - Possible Cause	
Long Harvest Cycle	
1. Evaporator	a) Scaled up.
2. Spray Tubes and/or Spray Guides	a) Dirty.
	b) Out of position.
3. Refrigerant Charge	a) Low.
4. Water Supply	a) Low water pressure.
	b) External water filters clogged.
	c) Insufficient water line size. Minimum 1/4" Nominal ID (6 mm Nominal OD in the EU) water tubing or equivalent.
	d) Too cold.
5. Control Board See "II.C. Control Board Check"	a) Thermistor connection loose (K3).
	b) Defective.
6. Thermistor See "II.F. Thermistor Check"	a) Loose, disconnected, or defective.
7. Hot Gas Valve	a) Erratic or closed.
8. Inlet Water Valve	a) Screen or orifice clogged.
9. Compressor	a) Inefficient or off.
10. Liquid Line Valve	a) Erratic or open.
11. Thermostatic Expansion Valve	a) Defective.

Low Ice Production - Possible Cause	
Long Freeze Cycle	
1. Evaporator	a) Scaled up, dirty.
2. Float Switch See "II.E. Float Switch Check and Cleaning"	a) Scaled up, dirty.
	b) Float sticking.
	c) Defective switch.
3. Inlet Water Valve	a) Leaking by.
4. Hot Gas Valve	a) Erratic or open.
5. Condenser	a) Clogged.
6. Control Board See "II.C. Control Board Check"	a) Float switch connection loose (K5).
	b) Defective.
7. Refrigerant Charge	a) Low.
8. Thermostatic Expansion Valve	a) Bulb loose.
	b) Defective.
9. Compressor	a) Inefficient or off.
10. Pump Motor	a) RPM too slow.
11. Liquid Line Valve	a) Erratic or restricted.
12. Headmaster (C.P.R.) (remote models)	a) Not bypassing.

III. Controls and Adjustments

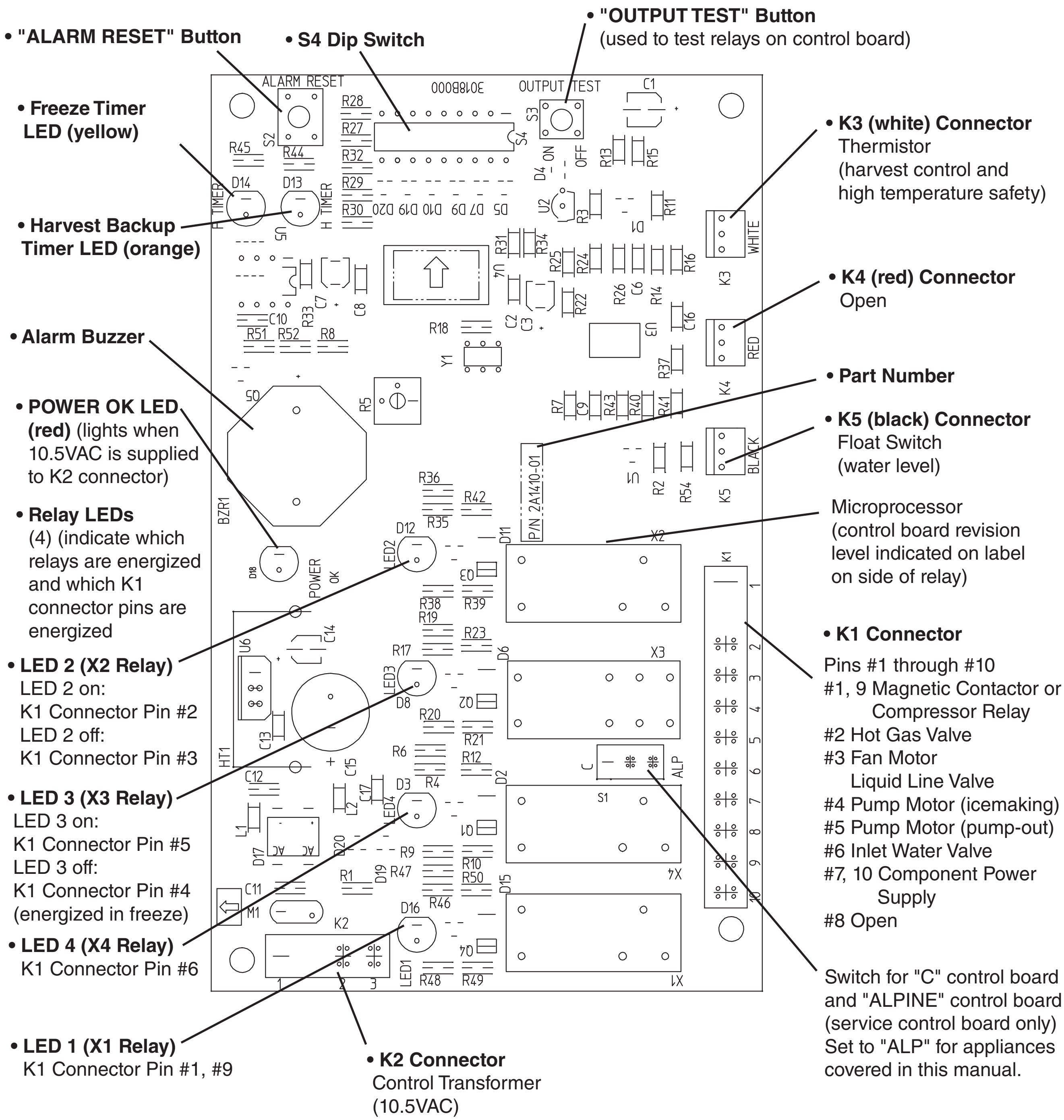
- A Hoshizaki exclusive control board is employed in KM series appliances.
- All models are pretested and factory adjusted.
- For a control board check procedure, see "II.C. Control Board Check."

NOTICE
• Fragile, handle very carefully. • The control board contains integrated circuits, which are susceptible to failure due to static discharge. It is especially important to touch the metal part of the icemaker when handling or replacing the control board. • Do not touch the electronic devices on the control board or the back of the control board. • Do not change wiring and connections. Do not misconnect K3 WHITE, K4 RED, and K5 BLACK, because the same connector is used for the thermistor, mechanical bin control, and float switch. K4 RED is not used on "E" control board models. • Do not short out power supply to test for voltage. • Always replace the whole control board assembly if it goes bad.

A. Control Board Layout

1. "E" Control Board

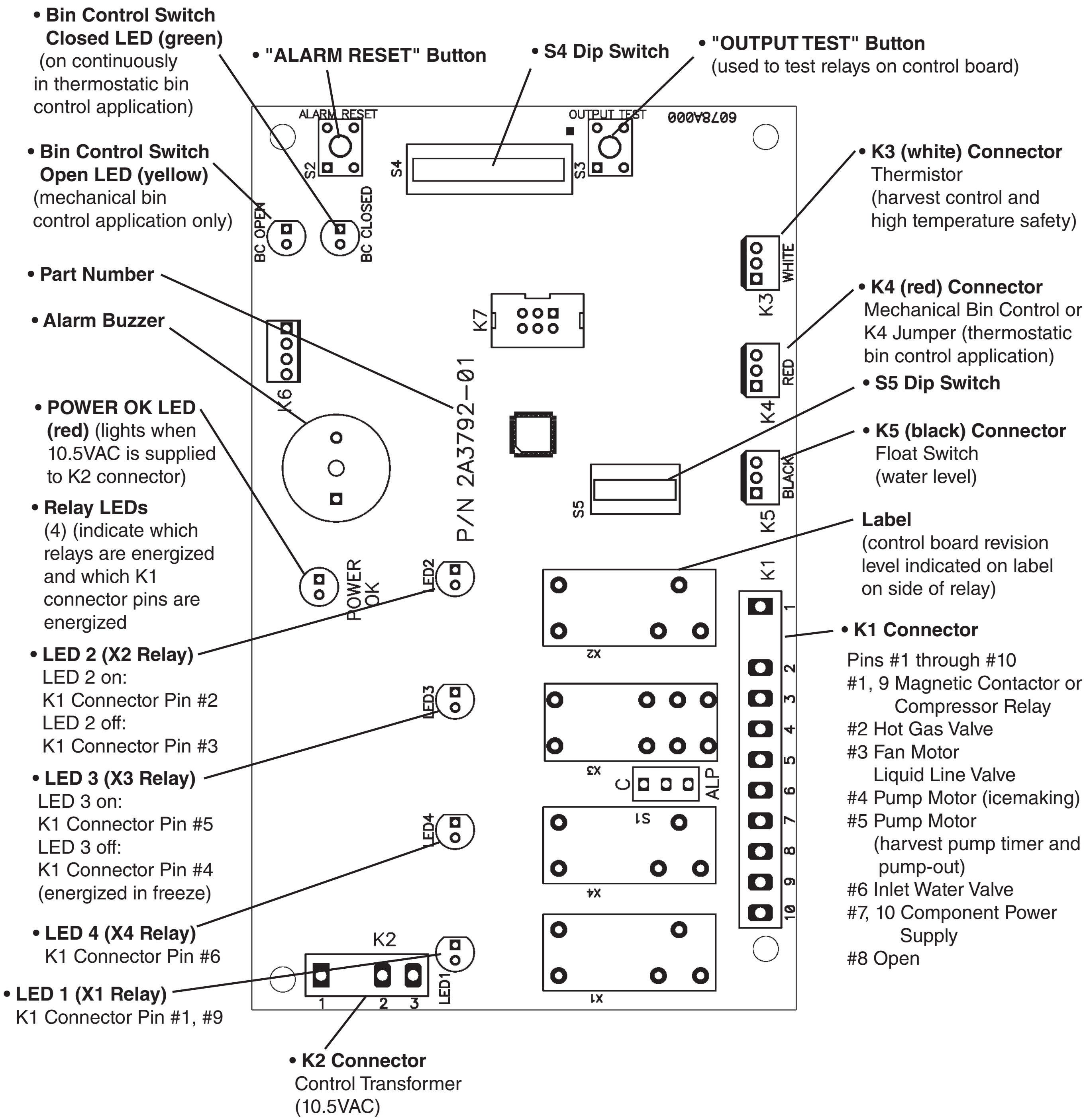
"E" Control Board



"E" Control Board	
Part Number	2A1410-02

2. "G" Control Board

"G" Control Board



"G" Control Board	
Part Number	2A3792-01

B. LED Lights and Audible Alarm Safeties

1. "E" Control Board

At startup, a 5-second delay occurs while the control board conducts an internal timer check. A beep occurs when power is turned off. The red "POWER OK" LED indicates proper control voltage and remains on unless a control voltage problem occurs. The green LEDs 1 through 4 energize and sequence from initial startup as listed in the table below. Note that the order of the LEDs from the outer edge of the control board is 1, 4, 3, 2.

Sequence Step	LED	Energized Components	Time LEDs are On		
			Min.	Max.	Avg.
1-Minute Fill Cycle	4	WV			1 minute
Harvest Cycle	1, 4, 2	Comp, FMR, HGV, WV	2 minutes	20 minutes	3 to 5 minutes
Freeze Cycle	1	Comp, FM/FMR, PM, LLV	5 minutes	freeze timer setting	30 to 35 minutes
Pump-Out Cycle	1, 4*, 3, 2	Comp, FMR, HGV, PM, WV*	10 seconds	20 seconds	*pump-out timer setting

The built in safeties shut down the icemaker and have alarms as listed below.

No. of Beeps (every 3 sec.)	Type of Alarm	Notes
1	High Evaporator Temp. (temperature > 127°F) (53°C)	Check for harvest problem (stuck HGV or relay), hot water entering icemaker, or shorted thermistor.
2	Harvest Backup Timer (harvest > 20 min. for two cycles in a row)	Orange "H TIMER" LED on. Check for open thermistor, HGV not opening, TXV or LLV leaking by, low charge, or inefficient Comp, or WRV leaking by.
3	Freeze Timer (freeze > specified setting for two cycles in a row)	Yellow "F TIMER" LED on. Check for FS stuck closed (up), WV leaking by, HGV leaking by, PM not pumping, TXV not feeding properly, LLV not opening, low charge, HM not bypassing, or inefficient Comp.
To reset the above safeties, press the "ALARM RESET" button with the power supply on.		
6	Low Voltage (92Vac±5% or less)	Red LED turns off if voltage protection operates. The control voltage safeties automatically reset when voltage is corrected.
7	High Voltage (147Vac±5% or more)	

Legend: **Comp**–compressor; **FM**–fan motor; **FMR**–fan motor remote; **FS**–float switch; **HGV**–hot gas valve; **HM**–headmaster (C.P.R.); **LLV**–liquid line valve; **PM**–pump motor; **TXV**–thermostatic expansion valve; **WRV**–water regulating valve; **WV**–inlet water valve

2. "G" Control Board

At startup, a 5-second delay occurs while the control board conducts an internal timer check. A beep occurs when the control switch is moved to the "ICE" position. The red "POWER OK" LED indicates proper control voltage and remains on unless a control voltage problem occurs. The green LEDs 1 through 4 energize and sequence from initial startup as listed in the table below. Note that the order of the LEDs from the outer edge of the control board is 1, 4, 3, 2.

Sequence Step	LED	Energized Components	Time LEDs are On		
			Min.	**Max.**	**Avg.**
1-Minute Fill Cycle	4	WV			1 minute
Harvest Cycle	1, 4, 2	Comp, FMR, HGV, WV	2 minutes	20 minutes	3 to 5 minutes
Harvest Pump Timer	1, 3, 2	Comp, FMR, HGV, PM	0 seconds	50 seconds	harvest pump timer setting
Freeze Cycle	1	Comp, FM/FMR, PM, LLV	5 minutes	freeze timer setting	30 to 35 minutes
Pump-Out Cycle	1, 4*, 3, 2	Comp, FMR, HGV, PM, WV*	10 seconds	20 seconds	*pump-out timer setting

The built-in safeties shut down the icemaker and have alarms as listed below.

No. of Beeps (every 3 sec.)	Type of Alarm	Notes
1	High Evaporator Temp. (temperature > 127°F) (53°C)	Check for harvest problem (stuck HGV or relay), hot water entering icemaker, or shorted thermistor.
2	Harvest Backup Timer (harvest > 20 min. for two cycles in a row)	Check for open thermistor, HGV not opening, TXV or LLV leaking by, low charge, or inefficient Comp, or WRV leaking by.
3	Freeze Timer (freeze > freeze timer setting for two cycles in a row)	Check for FS stuck closed (up), WV leaking by, HGV leaking by, PM not pumping, TXV not feeding properly, LLV not opening, low charge, HM not bypassing, or inefficient Comp.
To reset the above safeties, press the "ALARM RESET" button with the power supply on.		
6	Low Voltage (92Vac±5% or less)	Red LED turns off if voltage protection operates. The control voltage safeties automatically reset when voltage is corrected.
7	High Voltage (147Vac±5% or more)	

Legend: **Comp**–compressor; **FM**–fan motor; **FMR**–fan motor remote; **FS**–float switch; **HGV**–hot gas valve; **HM**–headmaster (C.P.R.); **LLV**–liquid line valve; **PM**–pump motor; **TXV**–thermostatic expansion valve; **WRV**–water regulating valve; **WV**–inlet water valve

C. Settings and Adjustments

NOTICE
Dip switches are factory set. Failure to maintain factory settings may adversely affect performance and warranty coverage. For more information, contact your Hoshizaki Service Center.

1. Default Dip Switch Settings

The dip switches are factory-adjusted to the following positions for both the "E" and "G" control boards:

a) "E" and "G" Control Board without Harvest Pump Timer Operation

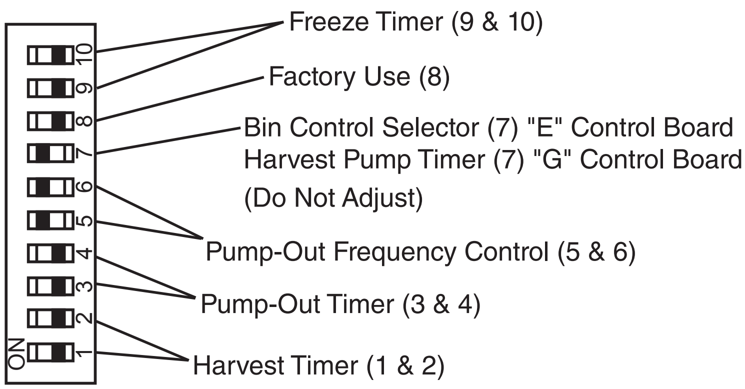
"E" Control Board S4 Dip Switch No.	1	2	3	4	5	6	7	8	9	10
KM-320MAH, KM-320MWH	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
KM-515MAH, KM-515MWH, KM-515MRH	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
KM-600MAH, KM-650MAH, KM-650MWH	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
KM-650MRH	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	ON	OFF
KM-901MAH, KM-901MWH, KM-901MRH/3	ON	OFF	ON	OFF	ON	ON	OFF	OFF	OFF	ON

b) "G" Control Board with Harvest Pump Timer Operation

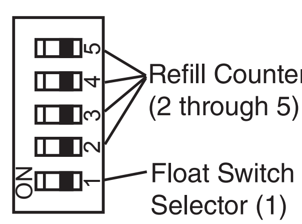
S4 Dip Switch No.	1	2	3	4	5	6	7	8	9	10
KM-515MAH	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	ON	OFF
KM-650MAH, KM-650MRH	ON	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF
KM-650MWH(-M)	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF
KM-901MAH	OFF	OFF	ON	OFF	ON	ON	ON	OFF	OFF	ON

S5 Dip Switch (Do Not Adjust) "G" Control Board					
Dip Switch No.	1	2	3	4	5
All Models	OFF	OFF	OFF	OFF	OFF

S4 Dip Switch
"E" and "G" Control Boards



S5 Dip Switch
"G" Control Board Only
Do Not Adjust



2. Harvest Timer (S4 dip switch 1 & 2)

The harvest timer starts counting when the thermistor reaches 48°F (9°C) at the evaporator outlet and the control board reads 3.9 kΩ from the thermistor. The harvest timer is factory set, and generally no adjustment is required. However, a setting longer than the factory setting may be advised in cases where the drain provided at harvest needs to be prolonged for extra cleaning. Before changing this setting, contact Hoshizaki Technical Support at 1-800-233-1940 for recommendations. Keep in mind that setting the harvest timer to a longer setting decreases 24-hour production.

Note that the pump-out timer (S4 dip switch 3 & 4) acts in place of the harvest timer during cycles with a pump out. For details, see "III.C.3. Pump-Out Timer (S4 dip switch 3 & 4)."

Note: On models with a pump-out every cycle, the harvest timer is only relevant during the initial harvest cycle since a pump out occurs every cycle thereafter.

S4 Dip Switch Setting		Time (sec.)
No. 1	No. 2	
OFF	OFF	60
ON	OFF	90
OFF	ON	120
ON	ON	180

3. Pump-Out Timer (S4 dip switch 3 & 4)

NOTICE

- On KM-515M_H models without harvest pump timer operation, never adjust the pump-out timer's harvest timer (T2) for a time less than 150 sec. Otherwise, the icemaker will not perform properly.
- On models with harvest pump timer, do not adjust 3 off and 4 on. Pump does not run in pump-out rotation in this setting.

When a pump-out is called for, the pump motor stops for 2 sec., then energizes in the reverse direction, taking water from the bottom of the water tank and forcing pressure against the check valve seat allowing water to go through the check valve and down the drain. At the same time, water flows through the small tube to power flush the float switch. The pump motor drains the water tank for the time determined by the pump-out timer. The pump-out timer also acts in place of the harvest timer during cycles with a pump-out. The pump-out timer is factory set, and generally no adjustment is required. However, where water quality is bad and the icemaker needs a longer pump-out time, the pump-out timer can be adjusted. The pump-out timer control can be set to pump-out for 10 or 20 sec.

S4 Dip Switch Setting		Time (sec.)		Inlet Water Valve
No. 3	No. 4	T1	T2	
OFF	OFF	10	150	Closed
ON	OFF	10	180	Closed
OFF	ON	10	120	Open
ON	ON	20	180	Closed

T1: Time to drain the water tank
T2: Harvest timer at pump out

4. Pump-Out Frequency Control (S4 dip switch 5 & 6)

NOTICE
Do not adjust on KM-515M_H without harvest pump timer. Adjustments to this setting on KM-515M_H without harvest pump timer may adversely affect performance and warranty coverage.

The pump-out frequency control is factory set to drain the water tank every 10 cycles on all KM-320M_H, KM-600MAH, KM-650M_H, KM-901M_H/3 and on KM-515MAH with harvest pump timer, and every cycle on KM-515M_H without harvest pump timer. Generally no adjustment is required. However, where water quality is bad and the icemaker needs a pump-out more often, the pump-out frequency can be adjusted. The pump-out frequency control can be set to have a pump-out occur every cycle, or every 2, 5, or 10 cycles.

Timing of the first pump-out is dependent on the control board. On "E" control boards, the first pump-out is after the first freeze cycle. On "G" control boards, the first pump-out is dependent on S4 dip switch 5 & 6. See the table below.

"E" & "G" Control Board			1st Pump-Out	
S4 Dip Switch Setting		Pump-Out Frequency	"E" Control Board	"G" Control Board
No. 5	No. 6			
OFF	OFF	Every cycle	After 1st freeze cycle	After 2nd freeze cycle
ON	OFF	Every 2 cycles		After 3rd freeze cycle
OFF	ON	Every 5 cycles		After 6th freeze cycle
ON	ON	Every 10 cycles		After 11th freeze cycle

5. Bin Control Selector or Harvest Pump Timer Operation (S4 dip switch 7)
Depending on the control board, S4 dip switch 7 is used for either bin control selection or harvest pump timer operation.

(1) Bin Control Selector, "E" Control Board

NOTICE
Do not adjust. This dip switch must be left in the factory default position or the icemaker will not operate correctly.

When set to on position on an icemaker with a thermostatic bin control, a 5-beep alarm sounds (open circuit) and the icemaker does not operate.

"E" Control Board	
S4 Dip Switch Setting	Bin Control
No. 7	
ON	Mechanical (requires resistor wire harness)
OFF	Thermostatic

(2) Harvest Pump Timer, "G" Control Board

NOTICE
Factory set for proper operation. Do not adjust. Adjustment outside of the factory default setting may result in damage to the appliance.

Depending on the harvest pump timer setting, the pump motor either stays off or is energized the last 50 seconds of harvest. When the pump motor is energized, water circulates over the evaporator. The harvest water valve is open during harvest for a maximum of 6 minutes or the length of harvest minus 0 or 50 seconds (determined by the harvest pump timer setting), whichever is shorter.
When S4 dip switch 7 is in the on position and harvest begins, X11 and X10 relays energize. A latching circuit is created through the X11 and X10 relays. For further details, see "VIII.C. Wiring Diagrams."
50 sec. before harvest termination, LED 4 turns off, inlet water valve and X11 relay de-energize. X10 relay remains energized through the latching circuit. Next, LED 3 turns on and control board K1 connector pin #5 (DBU wire) energizes, energizing the pump motor for the last 50 sec. of harvest.

"G" Control Board	
S4 Dip Switch Setting	Pump Motor Time (sec.)
No. 7	
ON	50
OFF	0

6. Factory Use (S4 dip switch 8)
Factory set for proper operation. Do not adjust. This must be left in the factory default position.

7. Freeze Timer (S4 dip switch 9 & 10)

NOTICE
Adjust to proper specification, or the icemaker may not operate correctly.

The freeze timer setting determines the maximum allowed freeze time to prevent possible freeze-up issues. Upon termination of the freeze timer, the control board initiates the harvest cycle or pump-out cycle. After 2 consecutive freeze timer terminations, the control board shuts down the icemaker. In this case, see "II.G.3. Low Ice Production" for possible solutions. The freeze timer is factory set and no adjustment is required. Before changing this setting, contact Hoshizaki Technical Support at 1-800-233-1940 for recommendations.

S4 Dip Switch Setting		Time (min.)
No. 9	No. 10	
OFF	OFF	60
OFF	ON	50
ON	OFF	70
ON	ON	75

8. Float Switch Selector (S5 dip switch 1): "G" Control Board

NOTICE
Do not adjust. This must be left in the factory default position or the icemaker will not operate correctly.

9. Refill Counter (S5 dip switch 2 through 5): "G" Control Board

NOTICE
Do not adjust. These must be left in the factory default position or the icemaker will not operate correctly.

D. Control Switch

The control switch has three positions: "OFF" for power off, "ICE" for icemaking, and "WASH" to energize the pump motor when cleaning and sanitizing.

IV. Refrigeration Circuit and Component Service Information

⚠ WARNING

- This appliance should be diagnosed and repaired only by qualified service personnel to reduce the risk of death, electric shock, serious injury, or fire.
- Move the control switch to the "OFF" position and turn off the power supply. Place the disconnect in the "OFF" position. Lockout/Tagout to prevent the power supply from being turned back on inadvertently.
- **CHOKING HAZARD:** Ensure all components, fasteners, and thumbscrews are securely in place after the icemaker is serviced. Make sure that none have fallen into the dispenser unit/ice storage bin.
- Make sure all food zones in the icemaker and dispenser unit/ice storage bin are clean after service.

A. Refrigeration Circuit Service Information

⚠ WARNING

- Repairs requiring the refrigeration circuit to be opened must be performed by properly trained and EPA-certified service personnel.
- Use an electronic leak detector or soap bubbles to check for leaks. Add a trace of refrigerant to the system (if using an electronic leak detector), and then raise the pressure using nitrogen gas (140 PSIG). Do not use R-404A as a mixture with pressurized air for leak testing.

NOTICE

- Always recover the refrigerant and store it in an approved container. Do not discharge the refrigerant into the atmosphere.
- Do not leave the system open for longer than 15 min. when replacing or servicing parts. The Polyol Ester (POE) oils used in R-404A applications can absorb moisture quickly. Therefore it is important to prevent moisture from entering the system when replacing or servicing parts.
- Always install a new drier every time the sealed refrigeration system is opened. Do not replace the drier until after all other repair or replacement has been made. Install the new drier with the arrow on the drier in the direction of the refrigerant flow.
- When brazing, protect the drier by using a wet cloth to prevent the drier from overheating. Do not allow the drier to exceed 250°F (121°C).

1. Refrigerant Recovery

The icemaker is provided with refrigerant access valves. Using proper refrigerant practices, recover the refrigerant. Store the refrigerant in an approved container. Do not discharge the refrigerant into the atmosphere.

2. Brazing

⚠ WARNING
• R-404A itself is not flammable at atmospheric pressure and temperatures up to 176°F (80°C). • R-404A itself is not explosive or poisonous. However, when exposed to high temperatures (open flames), R-404A can be decomposed to form hydrofluoric acid and carbonyl fluoride both of which are hazardous. • Do not use silver alloy or copper alloy containing arsenic.

1) Braze all fittings while purging with nitrogen gas flowing at a pressure of 3 to 4 PSIG.
   Note: Because the pipes in the evaporator case are specially coated to resist corrosion, it is important to make connections outside the evaporator case when possible. If it is necessary to braze inside the evaporator case, use sandpaper to remove the coating from the brazing connections before unbrazing the components.

NOTICE
• Always install a new drier every time the sealed refrigeration system is opened. • Do not replace the drier until after all other repair or replacement has been made. Install the new drier with the arrow on the drier in the direction of the refrigerant flow. • When brazing, protect the drier by using a wet cloth to prevent the drier from overheating. Do not allow the drier to exceed 250°F (121°C).

2) Use an electronic leak detector or soap bubbles to check for leaks. Add a trace of refrigerant to the system (if using an electronic leak detector), and then raise the pressure using nitrogen gas (140 PSIG). Do not use R-404A as a mixture with pressurized air for leak testing.

3. Evacuation and Recharge (R-404A)

1) Attach a vacuum pump to the system. Be sure to connect the charging hoses to both high and low-side refrigerant access valves.

IMPORTANT
The vacuum level and vacuum pump may be the same as those for current refrigerants. However, the rubber hose and gauge manifold to be used for evacuation and refrigerant charge should be exclusively for POE oils.

2) Turn on the vacuum pump. Open the gauge manifold valves. Never allow the oil in the vacuum pump to flow backwards.
3) Allow the vacuum pump to pull down to a 29.9" Hg vacuum. Evacuating period depends on pump capacity.
4) Close the low-side valve and high-side valve on the gauge manifold.

5) Disconnect the gauge manifold hose from the vacuum pump and attach it to a refrigerant service cylinder. Remember to loosen the connection and purge the air from the hose. For the required refrigerant charge, see the rating label inside the icemaker. Hoshizaki recommends only virgin refrigerant or reclaimed refrigerant which meets ARI Standard 700 (latest edition) be used.

6) A liquid charge is required when charging an R-404A system (to prevent fractionation). Place the service cylinder on the scales; if the service cylinder is not equipped with a dip tube, invert the service cylinder, then place it on the scales. Open the high-side valve on the gauge manifold.

7) Allow the system to charge with liquid until the proper charge weight is met.

8) If necessary, add any remaining charge to the system through the low-side.
***NOTICE!* To prevent compressor damage, use a throttling valve or liquid dispensing device to add the remaining liquid charge through the low-side refrigerant access valve with the icemaker running.**

9) Close the high and low-side gauge manifold valves, then disconnect the gauge manifold hoses.

10) Cap the refrigerant access valves to prevent a possible leak.

B. Component Service Information

NOTICE

When replacing a component listed below, see the notes to help ensure proper operation.

Component	Notes
Compressor	1 phase: Install a new start capacitor, run capacitor, and start relay. 3 phase: Install a new magnetic contactor.
Thermostatic Expansion Valves	• Attach the thermostatic expansion valve bulb to the suction line in the same location as the previous bulb. • The bulb should be between the 10 and 2 o'clock positions on the tube. • Secure the bulb with the clamp and holder, then insulate it.
Hot Gas Valves Liquid Line Valves	• Replace the strainer if applicable. • Use copper tube of the same diameter and length when replacing valve lines.
Fan Motors	Install a new capacitor.
Pump Motor	Install a new capacitor.
Thermistor	• Attach the new thermistor to the suction line in the same location as the previous thermistor. • The thermistor should be at the 12 o'clock position on the tube. • Smoothly fill the recessed area of the thermistor holder with high thermal conductive type sealant. Hoshizaki America part number 4A0683-01 (Silicone Heat Sink Compound 10-8108 manufactured by GC Electronics), KE-4560 RTV (manufactured by ShinEtsu Silicones), or equivalent are recommended. • Secure the thermistor with the holder, then insulate it. • Be very careful to prevent damage to the leads.
KM-650MWH-M Water Regulating Valve	Tighten the water regulating valve flare nut to a torque of 39.8 ft-lb/53.9 N·m.

C. Water Regulating Valve Adjustment (water-cooled model)

The water regulating valve is factory set, and generally no adjustment is required. However, when necessary, adjust the water regulator using the following procedure.

1) Prepare a thermometer to check the condenser drain temperature. Attach a pressure gauge to the high-side line of the system.

2) 5 min. after a freeze cycle starts, confirm that the thermometer reads 104°F to 115°F (40°C to 46°C). If it does not, rotate the adjustment screw by using a flat blade screwdriver until the temperature is in the proper range. See Fig. 5. Next, check that the reference pressure is in the range indicated in the Head Pressure table in the Performance Data section. If it is not in the proper range, verify the refrigerant charge.

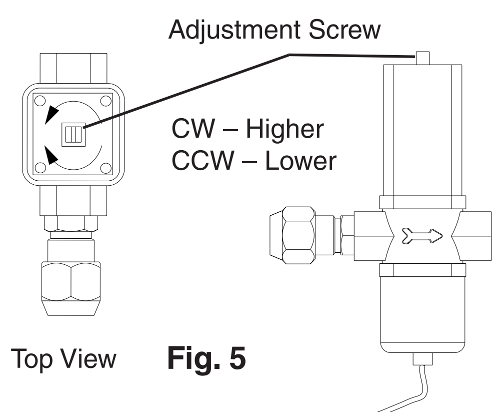


Fig. 5

3) Check that the condenser drain temperature is stable.

V. Maintenance

The maintenance schedule below is a guideline. More frequent maintenance may be required depending on water quality, the appliance's environment, and local sanitation regulations

⚠ WARNING

- Only qualified service technicians should service the appliance.
- To reduce the risk of electric shock, do not touch the control switch or service switch with damp hands
- Before servicing: Move the control switch to the "OFF" position and turn off the power supply. Place the disconnect in the "OFF" position.
  Lockout/Tagout to prevent the power supply from being turned back on inadvertently.
- **CHOKING HAZARD:** Ensure all components, fasteners, and thumbscrews are securely in place after any maintenance is done to the icemaker. Make sure that none have fallen into the dispenser unit/ice storage bin.

Maintenance Schedule

Frequency	Area	Task
Daily	Scoop	Clean the ice scoop using a neutral cleaner. Rinse thoroughly after cleaning.
Bi-Weekly	Air Filters	Inspect. Wash with warm water and neutral cleaner if dirty.
Monthly	External Water Filters	Check for proper pressure and change if necessary.
	Icemaker Exterior	Wipe down with a clean, soft cloth. Use a damp cloth containing a neutral cleaner to wipe off oil or dirt build up. Clean any chlorine staining (rust colored spots) using a non-abrasive cleanser.
	Underside of Icemaker and Top Kits; Bin Door and Snout	Wipe down with a clean cloth and warm water.
Yearly	Icemaker and Dispenser Unit/Ice Storage Bin Liner	Clean and sanitize per the cleaning and sanitizing instructions provided in the instruction manual or maintenance label on the icemaker.
	Water Supply Inlet	Close the icemaker water supply line shut-off valve and drain the water system. Clean the water supply inlet screen.
	Condenser	Inspect. Clean if necessary by using a brush or vacuum cleaner. More frequent cleaning may be required depending on location.
	Water Hoses	Inspect the water hoses and clean/replace if necessary.
As Needed	Marine Model Condenser	If contaminated seawater enters the system, flush with clean seawater or fresh water as soon as possible to minimize damage to the condenser.

VI. Preparing the Appliance for Periods of Non-Use

NOTICE

- When storing the appliance for an extended time or in sub-freezing temperatures, follow the instructions below to prevent damage.
- To prevent damage to the water pump, do not operate the appliance with the control switch in the "WASH" position when the water tank is empty.

When the appliance is not used for two or three days under normal conditions, it is sufficient to move the control switch to the "OFF" position. When storing the appliance for an extended time or in sub-freezing temperatures, follow the instructions below.

1. Remove the water from the icemaker water line:

1) Turn off the power supply, then remove the front panel.
2) Close the icemaker water supply line shut-off valve and open the icemaker water supply line drain valve.
3) Allow the line to drain by gravity.
4) Attach a compressed air or carbon dioxide supply to the icemaker water supply line drain valve.
5) Make sure at least 3 min. have elapsed since you turned off the power supply. Make sure the control switch is in the "ICE" position. Replace the front panel in its correct position, then turn on the power supply.
6) Blow the icemaker water supply line out using the compressed air or carbon dioxide supply.
7) Close the icemaker water supply line drain valve.

2. Remove the water from the water tank:

1) Turn off the power supply, then remove the front panel.
2) Move the control switch to the "OFF" position.
3) Remove the base cover, then disconnect one end of the pump tubing to drain the water tank. See Fig. 6. After the water tank has drained, reconnect the pump tubing.
4) Replace the base cover and the front panel in their correct positions.
5) Remove all ice from the dispensing unit/ice storage bin. Clean the storage bin liner using a neutral cleaner. Rinse thoroughly after cleaning.

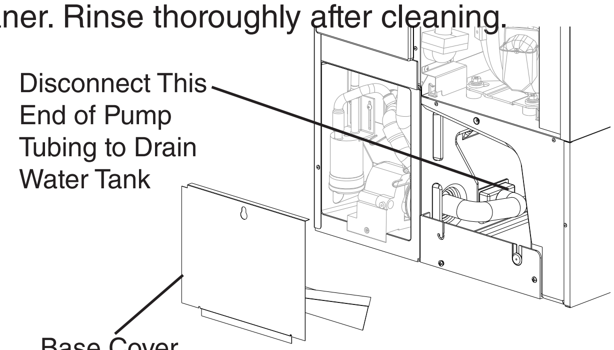


Fig. 6

3. On water-cooled model, remove the water from the water-cooled condenser:

1) Make sure the power supply is off, then remove the front panel and right side panel.
2) Close the condenser water supply line shut-off valve. If connected to a closed loop system, also close the condenser return line shut-off valve.
3) Open the condenser water supply line drain valve. If connected to a closed loop system, also open the condenser return line drain valve.
4) Attach a compressed air or carbon dioxide supply to the condenser water supply line drain valve.
5) Open the water regulating valve by using a screwdriver to pry up on the spring retainer underneath the spring. While holding the valve open, blow out the condenser using the compressed air or carbon dioxide supply until water stops coming out.
6) Close the drain valve(s).
7) Replace the right side panel and front panel in their correct positions.

VII. Disposal

The appliance contains refrigerant and must be disposed of in accordance with applicable national, state, and local codes and regulations. Refrigerant must be recovered by properly certified service personnel.

VIII. Technical Information

A. Specification Sheets

1. KM-320MAH

AC SUPPLY VOLTAGE	115/60/1			
AMPERAGE	9.7 A (5 Min. Freeze AT 104°F/WT 80°F)			
MINIMUM CIRCUIT AMPACITY	20 A			
MAXIMUM FUSE SIZE	20 A			
APPROXIMATE ICE PRODUCTION	Ambient	WATER TEMP. (°F)		
PER 24 HR.	Temp.(°F)	50	70	90
lbs./day (kg/day)	70	*325 (147)	311 (141)	287 (130)
Reference without *marks	80	315 (143)	293 (133)	265 (120)
	90	311 (141)	*278 (126)	251 (114)
	100	304 (138)	272 (123)	226 (103)
SHAPE OF ICE	Crescent Cube			
ICE PRODUCTION PER CYCLE	7.2 lbs. (3.3 kg) 360 pcs.			
APPROXIMATE STORAGE CAPACITY	N/A			
ELECTRIC & WATER CONSUMPTION	90/70°F		70/50°F	
ELECTRIC W (kWH/100 lbs.)	800(6.9)		750(5.5)	
WATER gal./24HR (gal./100 lbs.)	51(18.4)		117(35.9)	
EXTERIOR DIMENSIONS (WxDxH)	22" x 27-3/8" x 30-5/16" (560 x 695 x 770 mm)			
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)			
WEIGHT	Net 123 lbs. (56 kg), Shipping 153 lbs. (70 kg)			
CONNECTIONS - ELECTRIC	Permanent-Connection			
- WATER SUPPLY	Inlet	1/2" FPT		
- DRAIN	Outlet	3/4" FPT		
		3/8" OD Tube		
CUBE CONTROL SYSTEM	Float Switch			
HARVESTING CONTROL SYSTEM	Hot Gas and Water, Thermistor and Timer			
ICE MAKING WATER CONTROL	Timer Controlled. Overflow Pipe			
COOLING WATER CONTROL	N/A			
BIN CONTROL SYSTEM	Thermostatic or Mechanical Bin Control			
COMPRESSOR	Hermetic, Model ASE32C3E-CAA			
CONDENSER	Air-Cooled, Fin and Tube Type			
EVAPORATOR	Vertical Type, Stainless Steel and Copper			
REFRIGERANT CONTROL	Thermostatic Expansion Valve			
REFRIGERANT CHARGE	R-404A, 1 lb. 4.3 oz. (575g)			
DESIGN PRESSURE	High 467PSIG, Low 210PSIG			
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-Out (Internal)			
COMPRESSOR PROTECTION	Auto-Reset Overload Protector (Internal)			
REFRIGERANT CIRCUIT PROTECTION	Auto-Reset High Pressure Control Switch			
LOW WATER PROTECTION	Float Switch			
ACCESSORIES -SUPPLIED	N/A			
-REQUIRED	Ice Storage Bin			
OPERATING CONDITIONS	VOLTAGE RANGE			104 - 127 V
	AMBIENT TEMP.			45 -100° F
	WATER SUPPLY TEMP.			45 - 90° F
	WATER SUPPLY PRESSURE			10 - 113 PSIG

Note: We reserve the right to make changes in specifications and design without prior notice.

2. KM-320MWH

AC SUPPLY VOLTAGE	115/60/1
AMPERAGE	8.2 A (5 Min. Freeze AT 104°F / WT 80°F)
MINIMUM CIRCUIT AMPACITY	20 A
MAXIMUM FUSE SIZE	20 A

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./day (kg/day) Reference without *marks	Ambient Temp.(°F)	WATER TEMP. (°F)		
		50	70	90
	70	*352 (160)	348 (158)	324 (147)
	80	349 (158)	342 (155)	309 (140)
	90	348 (158)	*337 (153)	308 (140)
	100	337 (153)	330 (150)	281 (127)

SHAPE OF ICE	Crescent Cube	
ICE PRODUCTION PER CYCLE	7.2 lbs. (3.3 kg) 360 pcs.	
APPROXIMATE STORAGE CAPACITY	N/A	
ELECTRIC & WATER CONSUMPTION	90/70°F	70/50°F
ELECTRIC W (kWH/100 lbs.)	730(5.2)	730(5.0)
WATER gal./24HR (gal./100 lbs.)	57(16.8)	103(29.4)
WATER COOLED CONDENSER gal./24HR (gal./100 lbs.)	528(157)	327(93)

EXTERIOR DIMENSIONS (WxDxH)	22" x 27-3/8" x 30-5/16" (560 x 695 x 770 mm)	
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)	
WEIGHT	Net 123 lbs. (56 kg), Shipping 153 lbs. (70 kg)	
CONNECTIONS - ELECTRIC	Permanent-Connection	
- WATER SUPPLY	Inlet	1/2" FPT
- DRAIN	Outlet	3/4" FPT
		3/8" OD Tube
CUBE CONTROL SYSTEM	Float Switch	
HARVESTING CONTROL SYSTEM	Hot Gas and Water, Thermistor and Timer	
ICE MAKING WATER CONTROL	Timer Controlled. Overflow Pipe	
COOLING WATER CONTROL	Pressure Regulator	
BIN CONTROL SYSTEM	Thermostatic or Mechanical Bin Control	
COMPRESSOR	Hermetic, Model ASE32C3E-CAA	
CONDENSER	Water-Cooled, Tube in Tube Type	
EVAPORATOR	Vertical Type, Stainless Steel and Copper	
REFRIGERANT CONTROL	Thermostatic Expansion Valve	
REFRIGERANT CHARGE	R-404A, 1 lb. 0.8 oz. (486g)	
DESIGN PRESSURE	High 427PSIG, Low 210PSIG	
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-Out (Internal)	
COMPRESSOR PROTECTION	Auto-Reset Overload Protector (Internal)	
REFRIGERANT CIRCUIT PROTECTION	Auto-Reset High Pressure Control Switch	
LOW WATER PROTECTION	Float Switch	
ACCESSORIES -SUPPLIED	N/A	
-REQUIRED	Ice Storage Bin	
OPERATING CONDITIONS	VOLTAGE RANGE	104 - 127 V
	AMBIENT TEMP.	45 -100° F
	WATER SUPPLY TEMP.	45 - 90° F
	WATER SUPPLY PRESSURE	10 - 113 PSIG

Note: We reserve the right to make changes in specifications and design without prior notice.

3. KM-515MAH

AC SUPPLY VOLTAGE	115/60/1
AMPERAGE	11.7 A (5 Min. Freeze AT 104°F/WT 80°F)
MINIMUM CIRCUIT AMPACITY	20 A
MAXIMUM FUSE SIZE	20 A

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./day (kg/day) Reference without *marks	Ambient Temp.(°F)	WATER TEMP. (°F) 50	70	90
	70	*501 (227)	482 (218)	447 (203)
	80	486 (221)	456 (207)	416 (189)
	90	482 (218)	*435 (197)	396 (180)
	100	472 (214)	426 (193)	361 (164)

SHAPE OF ICE	Crescent Cube	
ICE PRODUCTION PER CYCLE	10.2 lbs. (4.6 kg) 480pcs.	
APPROXIMATE STORAGE CAPACITY	N/A	
ELECTRIC & WATER CONSUMPTION	90/70°F	70/50°F
ELECTRIC W (kWH/100 lbs.)	1090(6.0)	980(4.7)
WATER gal./24HR (gal./100 lbs.)	99(22.8)	188(37.6)
EXTERIOR DIMENSIONS (WxDxH)	22" x 27-3/8" x 30-5/16" (560 x 695 x 770 mm)	
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)	
WEIGHT	Net 151 lbs. (68 kg), Shipping 175 lbs. (79 kg)	
CONNECTIONS - ELECTRIC	Permanent-Connection	
- WATER SUPPLY	Inlet	1/2" FPT
- DRAIN	Outlet	3/4" FPT
		3/8" OD Tube
CUBE CONTROL SYSTEM	Float Switch	
HARVESTING CONTROL SYSTEM	Hot Gas and Water, Thermistor and Timer	
ICE MAKING WATER CONTROL	Timer Controlled. Overflow Pipe	
COOLING WATER CONTROL	N/A	
BIN CONTROL SYSTEM	Thermostatic or Mechanical Bin Control	
COMPRESSOR	Hermetic, Model RST55C1E-CAA-202	
CONDENSER	Air-Cooled, Fin and Tube Type	
EVAPORATOR	Vertical Type, Stainless Steel and Copper	
REFRIGERANT CONTROL	Thermostatic Expansion Valve	
REFRIGERANT CHARGE	R404A, 1 lb. 7.3 oz. (660g)	
DESIGN PRESSURE	High 467PSIG, Low 206PSIG	
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-Out (Internal)	
COMPRESSOR PROTECTION	Auto-Reset Overload Protector (Internal)	
REFRIGERANT CIRCUIT PROTECTION	Auto-Reset High Pressure Control Switch	
LOW WATER PROTECTION	Float Switch	
ACCESSORIES -SUPPLIED	N/A	
-REQUIRED	Ice Dispenser or Ice Storage Bin	
OPERATING CONDITIONS	VOLTAGE RANGE	104 - 127 V
	AMBIENT TEMP.	45 -100° F
	WATER SUPPLY TEMP.	45 - 90° F
	WATER SUPPLY PRESSURE	10 - 113 PSIG

Note: We reserve the right to make changes in specifications and design without prior notice.

4. KM-515MWH

AC SUPPLY VOLTAGE	115/60/1
AMPERAGE	9.6 A (5 Min. Freeze AT 104°F/WT 80°F)
MINIMUM CIRCUIT AMPACITY	20 A
MAXIMUM FUSE SIZE	20 A

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./day (kg/day) Reference without *marks	Ambient Temp.(°F)	WATER TEMP. (°F)		
		50	70	90
	70	*500 (227)	481 (218)	465 (211)
	80	486 (220)	457 (207)	445 (202)
	90	481 (218)	*436 (198)	422 (191)
	100	481 (218)	433 (196)	409 (186)

SHAPE OF ICE	Crescent Cube	
ICE PRODUCTION PER CYCLE	10.3 lbs. (4.7 kg) 480pcs.	
APPROXIMATE STORAGE CAPACITY	N/A	
ELECTRIC & WATER CONSUMPTION	90/70°F	70/50°F
ELECTRIC W (kWH/100 lbs.)	960(5.30)	940(4.5)
WATER gal./24HR (gal./100 lbs.)	105(24.0)	163(32.5)
WATER COOLED CONDENSER gal./24HR (gal./100 lbs.)	523(120)	352(70)

EXTERIOR DIMENSIONS (WxDxH)	22" x 27-3/8" x 30-5/16" (560 x 695 x 770 mm)			
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)			
WEIGHT	Net 151 lbs. (68 kg), Shipping 175 lbs. (79 kg)			
CONNECTIONS - ELECTRIC	Permanent-Connection			
- WATER SUPPLY	Inlet	1/2" FPT	Cond. Inlet	1/2" FPT
- DRAIN	Outlet	3/4" FPT 3/8" OD Tube	Cond. Outlet	3/8" FPT

CUBE CONTROL SYSTEM	Float Switch
HARVESTING CONTROL SYSTEM	Hot Gas and Water, Thermistor and Timer
ICE MAKING WATER CONTROL	Timer Controlled. Overflow Pipe
COOLING WATER CONTROL	Pressure Regulator
BIN CONTROL SYSTEM	Thermostatic or Mechanical Bin Control
COMPRESSOR	Hermetic, Model RST55C1E-CAA-202
CONDENSER	Water-Cooled, Tube in Tube Type
EVAPORATOR	Vertical Type, Stainless Steel and Copper
REFRIGERANT CONTROL	Thermostatic Expansion Valve
REFRIGERANT CHARGE	R404A, 0 lb. 14.8 oz. (420g)
DESIGN PRESSURE	High 427PSIG, Low 206PSIG
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-Out (Internal)
COMPRESSOR PROTECTION	Auto-Reset Overload Protector (Internal)
REFRIGERANT CIRCUIT PROTECTION	Auto-Reset High Pressure Control Switch
LOW WATER PROTECTION	Float Switch
ACCESSORIES -SUPPLIED	N/A
-REQUIRED	Ice Dispenser or Ice Storage Bin

OPERATING CONDITIONS	VOLTAGE RANGE	104 - 127 V
	AMBIENT TEMP.	45 -100° F
	WATER SUPPLY TEMP.	45 - 90° F
	WATER SUPPLY PRESSURE	10 - 113 PSIG

Note: We reserve the right to make changes in specifications and design without prior notice.

5. KM-515MRH

AC SUPPLY VOLTAGE	115/60/1			
AMPERAGE	11.3A (5 Min. Freeze AT 104°F/WT 80°F)			
MINIMUM CIRCUIT AMPACITY	20 A			
MAXIMUM FUSE SIZE	20 A			
APPROXIMATE ICE PRODUCTION	Ambient	WATER TEMP. (°F)		
PER 24 HR.	Temp.(°F)	50	70	90
lbs./day (kg/day)	70	*491 (223)	480 (218)	443 (201)
Reference without *marks	80	482 (219)	465 (211)	417 (189)
	90	480 (218)	*452 (205)	408 (185)
	100	465 (211)	442 (200)	368 (167)
SHAPE OF ICE	Crescent Cube			
ICE PRODUCTION PER CYCLE	10.3 lbs. (4.7 kg) 480pcs.			
APPROXIMATE STORAGE CAPACITY	N/A			
ELECTRIC & WATER CONSUMPTION	90/70°F		70/50°F	
ELECTRIC W (kWH/100 lbs.)	1090(5.8)		1000(4.9)	
WATER gal./24HR (gal./100 lbs.)	94(20.8)		198(40.4)	
EXTERIOR DIMENSIONS (WxDxH)	22" x 27-3/8" x 30-5/16" (560 x 695 x 770 mm)			
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)			
WEIGHT	Net 151 lbs. (68 kg), Shipping 175 lbs. (79 kg)			
CONNECTIONS - ELECTRIC	Permanent-Connection			
- WATER SUPPLY	Inlet	1/2" FPT		
- DRAIN	Outlet	3/4" FPT		
		3/8" OD Tube		
CUBE CONTROL SYSTEM	Float Switch			
HARVESTING CONTROL SYSTEM	Hot Gas and Water, Thermistor and Timer			
ICE MAKING WATER CONTROL	Timer Controlled. Overflow Pipe			
COOLING WATER CONTROL	N/A			
BIN CONTROL SYSTEM	Thermostatic or Mechanical Bin Control			
COMPRESSOR	Hermetic, Model RST55C1E-CAA-202			
CONDENSER	Remote Condenser Unit: URC-5F			
EVAPORATOR	Vertical Type, Stainless Steel and Copper			
REFRIGERANT CONTROL	Thermostatic Expansion Valve			
	Condensing Pressure Regulator on URC-5F			
REFRIGERANT CHARGE	R404A, 4 lbs. 4.8 oz. (1950g)			
	(Icemaker 2 lbs. 6.8 oz. Cond. Unit 1 lbs. 14 oz.)			
DESIGN PRESSURE	High 467PSIG, Low 206PSIG			
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-Out (Internal)			
COMPRESSOR PROTECTION	Auto-Reset Overload Protector (Internal)			
REFRIGERANT CIRCUIT PROTECTION	Auto-Reset High Pressure Control Switch			
LOW WATER PROTECTION	Float Switch			
ACCESSORIES -SUPPLIED	N/A			
-REQUIRED	Ice Dispenser or Ice Storage Bin, Remote Condenser Unit			
OPERATING CONDITIONS	VOLTAGE RANGE			104 - 127 V
	AMBIENT TEMP.			45 -100° F
	WATER SUPPLY TEMP.			45 - 90° F
	WATER SUPPLY PRESSURE			10 - 113 PSIG

Note: We reserve the right to make changes in specifications and design without prior notice.

6. KM-600MAH

AC SUPPLY VOLTAGE	115-120/60/1			
AMPERAGE	12.0 A (5 Min. Freeze AT 104°F/WT 80°F)			
MINIMUM CIRCUIT AMPACITY	15 A			
MAXIMUM FUSE SIZE	15 A			
APPROXIMATE ICE PRODUCTION	Ambient	WATER TEMP. (°F)		
PER 24 HR.	Temp.(°F)	50	70	90
lbs./day (kg/day)	70	*592 (269)	566 (257)	516 (234)
Reference without *marks	80	572 (260)	532 (241)	474 (215)
	90	566 (257)	*503 (228)	447 (203)
	100	551 (250)	490 (222)	396 (180)
SHAPE OF ICE	Crescent Cube			
ICE PRODUCTION PER CYCLE	14.3 lbs. (6.5 kg) 720 pcs.			
APPROXIMATE STORAGE CAPACITY	N/A			
ELECTRIC & WATER CONSUMPTION	90/70°F		70/50°F	
ELECTRIC W (kWH/100 lbs.)	1190(5.7)		1040(4.2)	
WATER gal./24HR (gal./100 lbs.)	99(19.7)		259(43.7)	

EXTERIOR DIMENSIONS (WxDxH)	22" x 27-3/8" x 37-7/16" (560 x 695 x 950 mm)	
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)	
WEIGHT	Net 169 lbs. (77 kg), Shipping 200 lbs. (91 kg)	
CONNECTIONS - ELECTRIC	Permanent-Connection	
- WATER SUPPLY	Inlet 1/2" FPT	
- DRAIN	Outlet 3/4" FPT	
	3/8" OD Tube	
CUBE CONTROL SYSTEM	Float Switch	
HARVESTING CONTROL SYSTEM	Hot Gas and Water, Thermistor and Timer	
ICE MAKING WATER CONTROL	Timer Controlled. Overflow Pipe	
COOLING WATER CONTROL	N/A	
BIN CONTROL SYSTEM	Thermostatic or Mechanical Bin Control	
COMPRESSOR	Hermetic, Model RST55C1E-CAA	
CONDENSER	Air-Cooled, Fin and Tube Type	
EVAPORATOR	Vertical Type, Stainless Steel and Copper	
REFRIGERANT CONTROL	Thermostatic Expansion Valve	
REFRIGERANT CHARGE	R-404A, 1 lb. 11 oz. (765g)	
DESIGN PRESSURE	High 467PSIG, Low 230PSIG	
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-Out (Internal)	
COMPRESSOR PROTECTION	Auto-Reset Overload Protector (Internal)	
REFRIGERANT CIRCUIT PROTECTION	Auto-Reset High Pressure Control Switch	
LOW WATER PROTECTION	Float Switch	
ACCESSORIES -SUPPLIED	N/A	
-REQUIRED	Ice Storage Bin	
OPERATING CONDITIONS	VOLTAGE RANGE	104 - 127 V
	AMBIENT TEMP.	45 -100° F
	WATER SUPPLY TEMP.	45 - 90° F
	WATER SUPPLY PRESSURE	10 - 113 PSIG

Note: We reserve the right to make changes in specifications and design without prior notice.

7. KM-650MAH

AC SUPPLY VOLTAGE	208-230/60/1 (3 wire for 115V)			
AMPERAGE	7.2 A (5 Min. Freeze AT 104°F/WT 80°F)			
MINIMUM CIRCUIT AMPACITY	15 A			
MAXIMUM FUSE SIZE	15 A			
APPROXIMATE ICE PRODUCTION	Ambient	WATER TEMP. (°F)		
PER 24 HR.	Temp.(°F)	50	70	90
lbs./day (kg/day)	70	*661 (300)	632 (287)	591 (268)
Reference without *marks	80	639 (290)	594 (269)	553 (251)
	90	632 (287)	*562 (255)	520 (236)
	100	624 (283)	552 (250)	482 (219)
SHAPE OF ICE	Crescent Cube			
ICE PRODUCTION PER CYCLE	14.6 lbs. (6.6 kg) 720 pcs.			
APPROXIMATE STORAGE CAPACITY	N/A			
ELECTRIC & WATER CONSUMPTION	90/70°F		70/50°F	
ELECTRIC W (kWH/100 lbs.)	1290(5.51)		1180(4.30)	
WATER gal./24HR (gal./100 lbs.)	101(18.0)		232(35.1)	

EXTERIOR DIMENSIONS (WxDxH)	22" x 27-3/8" x 37-7/16" (560 x 695 x 950 mm)	
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)	
WEIGHT	Net 169 lbs. (77 kg), Shipping 200 lbs. (91 kg)	
CONNECTIONS - ELECTRIC	Permanent-Connection	
- WATER SUPPLY	Inlet 1/2" FPT	
- DRAIN	Outlet 3/4" FPT 3/8" OD Tube	
CUBE CONTROL SYSTEM	Float Switch	
HARVESTING CONTROL SYSTEM	Hot Gas and Water, Thermistor and Timer	
ICE MAKING WATER CONTROL	Timer Controlled. Overflow Pipe	
COOLING WATER CONTROL	N/A	
BIN CONTROL SYSTEM	Thermostatic or Mechanical Bin Control	
COMPRESSOR	Hermetic, Model RST61C1E-CAV-202	
CONDENSER	Air-Cooled, Fin and Tube Type	
EVAPORATOR	Vertical Type, Stainless Steel and Copper	
REFRIGERANT CONTROL	Thermostatic Expansion Valve	
REFRIGERANT CHARGE	R-404A, 1 lb. 8 oz. (680g)	
DESIGN PRESSURE	High 467PSIG, Low 230PSIG	
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-Out (Internal)	
COMPRESSOR PROTECTION	Auto-Reset Overload Protector (Internal)	
REFRIGERANT CIRCUIT PROTECTION	Auto-Reset High Pressure Control Switch	
LOW WATER PROTECTION	Float Switch	
ACCESSORIES -SUPPLIED	N/A	
-REQUIRED	Ice Storage Bin	
OPERATING CONDITIONS	VOLTAGE RANGE	187 - 253 V
	AMBIENT TEMP.	45 -100° F
	WATER SUPPLY TEMP.	45 - 90° F
	WATER SUPPLY PRESSURE	10 - 113 PSIG

Note: We reserve the right to make changes in specifications and design without prior notice.

8. KM-650MWH

AC SUPPLY VOLTAGE	208-230/60/1 (3 wire for 115V)
AMPERAGE	5.4 A (5 Min. Freeze AT 104°F/WT 80°F)
MINIMUM CIRCUIT AMPACITY	15 A
MAXIMUM FUSE SIZE	15 A

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./day (kg/day) Reference without *marks	Ambient Temp.(°F)	WATER TEMP. (°F) 50	70	90
	70	*661 (300)	649 (294)	616 (280)
	80	652 (296)	633 (287)	591 (268)
	90	649 (294)	*620 (281)	581 (264)
	100	637 (289)	611 (277)	546 (248)

SHAPE OF ICE	Crescent Cube	
ICE PRODUCTION PER CYCLE	14.2 lbs. (6.5 kg) 720 pcs.	
APPROXIMATE STORAGE CAPACITY	N/A	
ELECTRIC & WATER CONSUMPTION	90/70°F	70/50°F
ELECTRIC W (kWH/100 lbs.)	1060(4.10)	1080(3.92)
WATER gal./24HR (gal./100 lbs.)	138(22.3)	268(40.5)
WATER COOLED CONDENSER gal./24HR (gal./100 lbs.)	744(120)	476(72)

EXTERIOR DIMENSIONS (WxDxH)	22" x 27-3/8" x 37-7/16" (560 x 695 x 950 mm)			
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)			
WEIGHT	Net 169 lbs. (77 kg), Shipping 200 lbs. (91 kg)			
CONNECTIONS - ELECTRIC	Permanent-Connection			
- WATER SUPPLY	Inlet	1/2" FPT	Condenser Inlet	1/2" FPT
- DRAIN	Outlet	3/4" FPT	Condenser Outlet	3/8" FPT
		3/8" OD Tube		
CUBE CONTROL SYSTEM	Float Switch			
HARVESTING CONTROL SYSTEM	Hot Gas and Water, Thermistor and Timer			
ICE MAKING WATER CONTROL	Timer Controlled. Overflow Pipe			
COOLING WATER CONTROL	Pressure Regulator			
BIN CONTROL SYSTEM	Thermostatic or Mechanical Bin Control			
COMPRESSOR	Hermetic, Model RST61C1E-CAV-202			
CONDENSER	Water-Cooled, Tube in Tube Type			
EVAPORATOR	Vertical Type, Stainless Steel and Copper			
REFRIGERANT CONTROL	Thermostatic Expansion Valve			
REFRIGERANT CHARGE	R-404A, 1 lb. 5.2 oz. (600g)			
DESIGN PRESSURE	High 427PSIG, Low 230PSIG			
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-Out (Internal)			
COMPRESSOR PROTECTION	Auto-Reset Overload Protector (Internal)			
REFRIGERANT CIRCUIT PROTECTION	Auto-Reset High Pressure Control Switch			
LOW WATER PROTECTION	Float Switch			
ACCESSORIES -SUPPLIED	N/A			
-REQUIRED	Ice Storage Bin			
OPERATING CONDITIONS	VOLTAGE RANGE			187 - 253 V
	AMBIENT TEMP.			45 -100° F
	WATER SUPPLY TEMP.			45 - 90° F
	WATER SUPPLY PRESSURE			10 - 113 PSIG

Note: We reserve the right to make changes in specifications and design without prior notice.

9. KM-650MWH-M

AWAITING DATA

Note: We reserve the right to make changes in specifications and design without prior notice.

10. KM-650MRH

AC SUPPLY VOLTAGE	208-230/60/1 (3 wire for 115V)			
AMPERAGE	7.4 A (5 Min. Freeze AT 104°F/WT 80°F)			
MINIMUM CIRCUIT AMPACITY	15 A			
MAXIMUM FUSE SIZE	15 A			
APPROXIMATE ICE PRODUCTION	Ambient	WATER TEMP. (°F)		
PER 24 HR.	Temp.(°F)	50	70	90
lbs./day (kg/day)	70	*632 (287)	612 (278)	574 (260)
Reference without *marks	80	617 (280)	586 (266)	541 (246)
	90	612 (278)	*564 (256)	521 (236)
	100	601 (272)	554 (251)	482 (219)
SHAPE OF ICE	Crescent Cube			
ICE PRODUCTION PER CYCLE	14.4 lbs. (6.5 kg) 720 pcs.			
APPROXIMATE STORAGE CAPACITY	N/A			
ELECTRIC & WATER CONSUMPTION	90/70°F		70/50°F	
ELECTRIC W (kWH/100 lbs.)	1320(5.6)		1220(4.6)	
WATER gal./24HR (gal./100 lbs.)	93(16.5)		267(42.2)	

EXTERIOR DIMENSIONS (WxDxH)	22" x 27-3/8" x 37-7/16" (560 x 695 x 950 mm)	
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)	
WEIGHT	Net 169 lbs. (77 kg), Shipping 200 lbs. (91 kg)	
CONNECTIONS - ELECTRIC	Permanent-Connection	
- WATER SUPPLY	Inlet	1/2" FPT
- DRAIN	Outlet	3/4" FPT
		3/8" OD Tube
CUBE CONTROL SYSTEM	Float Switch	
HARVESTING CONTROL SYSTEM	Hot Gas and Water, Thermistor and Timer	
ICE MAKING WATER CONTROL	Timer Controlled. Overflow Pipe	
COOLING WATER CONTROL	N/A	
BIN CONTROL SYSTEM	Thermostatic or Mechanical Bin Control	
COMPRESSOR	Hermetic, Model RST61C1E-CAV	
CONDENSER	Remote Condenser Unit: URC-5F	
EVAPORATOR	Vertical Type, Stainless Steel and Copper	
REFRIGERANT CONTROL	Thermostatic Expansion Valve	
	Condensing Pressure Regulator on URC-5F	
REFRIGERANT CHARGE	R-404A, 5 lbs. 14.9 oz. (2690 g)	
	(Icemaker 4 lbs. 0.9 oz. Cond. Unit 1 lb. 14 oz.)	
DESIGN PRESSURE	High 467 PSIG, Low 230 PSIG	
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-Out (Internal)	
COMPRESSOR PROTECTION	Auto-Reset Overload Protector (Internal)	
REFRIGERANT CIRCUIT PROTECTION	Auto-Reset High Pressure Control Switch	
LOW WATER PROTECTION	Float Switch	
ACCESSORIES -SUPPLIED	N/A	
-REQUIRED	Ice Storage Bin, Remote Condenser Unit	
OPERATING CONDITIONS	VOLTAGE RANGE	187 - 253 V
	AMBIENT TEMP.	45 -100° F
	WATER SUPPLY TEMP.	45 - 90° F
	WATER SUPPLY PRESSURE	10 - 113 PSIG

Note: We reserve the right to make changes in specifications and design without prior notice.

11. KM-901MAH

AC SUPPLY VOLTAGE	208-230/60/1 (3 wire for 115V)
AMPERAGE	11.4 A (5 Min. Freeze AT 104°F/WT 80°F)
MINIMUM CIRCUIT AMPACITY	20 A
MAXIMUM FUSE SIZE	20 A

APPROXIMATE ICE PRODUCTION PER 24 HR.
lbs./day (kg/day)
Reference without *marks

Ambient Temp.(°F)	WATER TEMP. (°F) 50	70	90
70	*874 (396)	832 (378)	785 (356)
80	842 (382)	778 (353)	736 (334)
90	832 (378)	*732 (332)	687 (312)
100	826 (375)	721 (327)	646 (293)

SHAPE OF ICE	Crescent Cube	
ICE PRODUCTION PER CYCLE	13.6 lbs. (6.2 kg) 720pcs.	
APPROXIMATE STORAGE CAPACITY	N/A	
ELECTRIC & WATER CONSUMPTION	90/70°F	70/50°F
ELECTRIC W (kWH/100 lbs.)	1710(5.6)	1600(4.4)
WATER gal./24HR (gal./100 lbs.)	143(19.6)	240(27.5)
EXTERIOR DIMENSIONS (WxDxH)	30" x 27-3/8" x 37-7/16" (762 x 695 x 950 mm)	
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)	
WEIGHT	Net 196 lbs. (89 kg), Shipping 256 lbs. (116 kg)	
CONNECTIONS - ELECTRIC	Permanent-Connection	
- WATER SUPPLY	Inlet	1/2" FPT
- DRAIN	Outlet	3/4" FPT
		3/8" OD Tube
CUBE CONTROL SYSTEM	Float Switch	
HARVESTING CONTROL SYSTEM	Hot Gas and Water, Thermistor and Timer	
ICE MAKING WATER CONTROL	Timer Controlled. Overflow Pipe	
COOLING WATER CONTROL	N/A	
BIN CONTROL SYSTEM	Thermostatic or Mechanical Bin Control	
COMPRESSOR	Hermetic, Model CS12K6E-PFV-237	
CONDENSER	Air-Cooled, Fin and Tube Type	
EVAPORATOR	Vertical Type, Stainless Steel and Copper	
REFRIGERANT CONTROL	Thermostatic Expansion Valve	
REFRIGERANT CHARGE	R404A, 2 lb. 15 oz. (1320g)	
DESIGN PRESSURE	High 467PSIG, Low 230PSIG	
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-Out (Internal)	
COMPRESSOR PROTECTION	Auto-Reset Overload Protector (Internal)	
REFRIGERANT CIRCUIT PROTECTION	Auto-Reset High Pressure Control Switch	
LOW WATER PROTECTION	Float Switch	
ACCESSORIES -SUPPLIED	N/A	
-REQUIRED	Ice Storage Bin	
OPERATING CONDITIONS	VOLTAGE RANGE	187 - 253 V
	AMBIENT TEMP.	45 -100° F
	WATER SUPPLY TEMP.	45 - 90° F
	WATER SUPPLY PRESSURE	10 - 113 PSIG

Note: We reserve the right to make changes in specifications and design without prior notice.

12. KM-901MWH

AC SUPPLY VOLTAGE	208-230/60/1 (3 wire for 115V)
AMPERAGE	8.7A (5 Min. Freeze AT 104°F/WT 80°F)
MINIMUM CIRCUIT AMPACITY	15 A
MAXIMUM FUSE SIZE	15 A

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./day (kg/day) Reference without *marks	Ambient Temp.(°F)	WATER TEMP. (°F) 50	70	90
	70	*912 (414)	887 (402)	849 (385)
	80	893 (405)	854 (388)	815 (370)
	90	887 (402)	*827 (375)	787 (357)
	100	878 (398)	818 (371)	751 (341)

SHAPE OF ICE	Crescent Cube
ICE PRODUCTION PER CYCLE	13.4 lbs. (6.1 kg) 720pcs.
APPROXIMATE STORAGE CAPACITY	N/A

ELECTRIC & WATER CONSUMPTION	90/70°F	70/50°F
ELECTRIC W (kWH/100 lbs.)	1550(4.5)	1480(3.9)
WATER gal./24HR (gal./100 lbs.)	181(21.9)	245(26.9)
WATER COOLED CONDENSER gal./24HR (gal./100 lbs.)	1151(139)	631(69)

EXTERIOR DIMENSIONS (WxDxH)	30" x 27-3/8" x 37-7/16" (762 x 695 x 950 mm)			
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)			
WEIGHT	Net 189 lbs. (86 kg), Shipping 249 lbs. (113 kg)			
CONNECTIONS - ELECTRIC	Permanent-Connection			
- WATER SUPPLY	Inlet	1/2" FPT	Cond. Inlet	1/2" FPT
- DRAIN	Outlet	3/4" FPT 3/8" OD Tube	Cond. Outlet	3/8" FPT
CUBE CONTROL SYSTEM	Float Switch			
HARVESTING CONTROL SYSTEM	Hot Gas and Water, Thermistor and Timer			
ICE MAKING WATER CONTROL	Timer Controlled. Overflow Pipe			
COOLING WATER CONTROL	Pressure Regulator			
BIN CONTROL SYSTEM	Thermostatic or Mechanical Bin Control			
COMPRESSOR	Hermetic, Model CS12K6E-PFV-237			
CONDENSER	Water-Cooled, Tube in Tube Type			
EVAPORATOR	Vertical Type, Stainless Steel and Copper			
REFRIGERANT CONTROL	Thermostatic Expansion Valve			
REFRIGERANT CHARGE	R404A, 1 lb. 15.4 oz. (890g)			
DESIGN PRESSURE	High 427PSIG, Low 230PSIG			
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-Out (Internal)			
COMPRESSOR PROTECTION	Auto-Reset Overload Protector (Internal)			
REFRIGERANT CIRCUIT PROTECTION	Auto-Reset High Pressure Control Switch			
LOW WATER PROTECTION	Float Switch			
ACCESSORIES -SUPPLIED	N/A			
-REQUIRED	Ice Storage Bin			

OPERATING CONDITIONS	VOLTAGE RANGE	187 - 253 V
	AMBIENT TEMP.	45 -100° F
	WATER SUPPLY TEMP.	45 - 90° F
	WATER SUPPLY PRESSURE	10 - 113 PSIG

Note: We reserve the right to make changes in specifications and design without prior notice.

13. KM-901MRH

AC SUPPLY VOLTAGE	208-230/60/1 (3 wire for 115V)
AMPERAGE	11.6A (5 Min. Freeze AT 104°F/WT 80°F)
MINIMUM CIRCUIT AMPACITY	20 A
MAXIMUM FUSE SIZE	20 A

APPROXIMATE ICE PRODUCTION PER 24 HR.
lbs./day (kg/day)
Reference without *marks

Ambient Temp.(°F)	WATER TEMP. (°F) 50	70	90
70	*889 (403)	859 (389)	803 (364)
80	866 (393)	818 (371)	755 (343)
90	859 (389)	*785 (356)	724 (328)
100	843 (382)	771 (350)	668 (303)

SHAPE OF ICE	Crescent Cube	
ICE PRODUCTION PER CYCLE	13.5 lbs. (6.1 kg) 720pcs.	
APPROXIMATE STORAGE CAPACITY	N/A	
ELECTRIC & WATER CONSUMPTION	90/70°F	70/50°F
ELECTRIC W (kWH/100 lbs.)	1770(5.4)	1590(4.3)
WATER gal./24HR (gal./100 lbs.)	152(19.3)	246(27.7)

EXTERIOR DIMENSIONS (WxDxH)	30" x 27-3/8" x 37-7/16" (762 x 695 x 950 mm)
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)
WEIGHT	Net 189 lbs. (86 kg), Shipping 249 lbs. (113 kg)
CONNECTIONS - ELECTRIC	Permanent-Connection
- WATER SUPPLY	Inlet 1/2" FPT
- DRAIN	Outlet 3/4" FPT 3/8" OD Tube
CUBE CONTROL SYSTEM	Float Switch
HARVESTING CONTROL SYSTEM	Hot Gas and Water, Thermistor and Timer
ICE MAKING WATER CONTROL	Timer Controlled. Overflow Pipe
COOLING WATER CONTROL	N/A
BIN CONTROL SYSTEM	Thermostatic or Mechanical Bin Control
COMPRESSOR	Hermetic, Model CS12K6E-PFV-279
CONDENSER	Remote Condenser Unit: URC-9F
EVAPORATOR	Vertical Type, Stainless Steel and Copper
REFRIGERANT CONTROL	Thermostatic Expansion Valve Condensing Pressure Regulator on URC-9F
REFRIGERANT CHARGE	R404A, 9 lbs. 4 oz. (4200g) (Icemaker 5 lbs. 5 oz. Cond. Unit 3 lbs. 15 oz.)
DESIGN PRESSURE	High 467PSIG, Low 230PSIG
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-Out (Internal)
COMPRESSOR PROTECTION	Auto-Reset Overload Protector (Internal)
REFRIGERANT CIRCUIT PROTECTION	Auto-Reset High Pressure Control Switch
LOW WATER PROTECTION	Float Switch
ACCESSORIES -SUPPLIED	N/A
-REQUIRED	Ice Storage Bin, Remote Condenser Unit

OPERATING CONDITIONS	VOLTAGE RANGE	187 - 253 V
	AMBIENT TEMP.	45 -100° F
	WATER SUPPLY TEMP.	45 - 90° F
	WATER SUPPLY PRESSURE	10 - 113 PSIG

Note: We reserve the right to make changes in specifications and design without prior notice.

14. KM-901MRH3

AC SUPPLY VOLTAGE	208-230/60/3
AMPERAGE	7.0A (5 Min. Freeze AT 104°F/WT 80°F)
MINIMUM CIRCUIT AMPACITY	20 A
MAXIMUM FUSE SIZE	20 A

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./day (kg/day) Reference without *marks	Ambient Temp.(°F)	WATER TEMP. (°F) 50	70	90
	70	*899 (408)	874 (397)	817 (371)
	80	880 (399)	842 (382)	772 (350)
	90	874 (397)	*815 (370)	749 (340)
	100	855 (388)	800 (363)	689 (313)

SHAPE OF ICE	Crescent Cube	
ICE PRODUCTION PER CYCLE	14.2 lbs. (6.4 kg) 720pcs.	
APPROXIMATE STORAGE CAPACITY	N/A	
ELECTRIC & WATER CONSUMPTION	90/70°F	70/50°F
ELECTRIC W (kWH/100 lbs.)	1830(5.4)	1670(4.5)
WATER gal./24HR (gal./100 lbs.)	147(18.0)	254(28.2)

EXTERIOR DIMENSIONS (WxDxH)	30" x 27-3/8" x 37-7/16" (762 x 695 x 950 mm)	
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)	
WEIGHT	Net 198 lbs. (90 kg), Shipping 258 lbs. (117 kg)	
CONNECTIONS - ELECTRIC	Permanent-Connection	
- WATER SUPPLY	Inlet	1/2" FPT
- DRAIN	Outlet	3/4" FPT
		3/8" OD Tube
CUBE CONTROL SYSTEM	Float Switch	
HARVESTING CONTROL SYSTEM	Hot Gas and Water, Thermistor and Timer	
ICE MAKING WATER CONTROL	Timer Controlled. Overflow Pipe	
COOLING WATER CONTROL	N/A	
BIN CONTROL SYSTEM	Thermostatic or Mechanical Bin Control	
COMPRESSOR	Hermetic, Model CS12K6E-TF5-279	
CONDENSER	Remote Condenser Unit: URC-9F	
EVAPORATOR	Vertical Type, Stainless Steel and Copper	
REFRIGERANT CONTROL	Thermostatic Expansion Valve	
	Condensing Pressure Regulator on URC-9F	
REFRIGERANT CHARGE	R404A, 9 lbs. 4 oz. (4200g)	
	(Icemaker 5 lbs. 5 oz. Cond. Unit 3 lbs. 15 oz.)	
DESIGN PRESSURE	High 467PSIG, Low 230PSIG	
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-Out (Internal)	
COMPRESSOR PROTECTION	Auto-Reset Overload Protector (Internal)	
REFRIGERANT CIRCUIT PROTECTION	Auto-Reset High Pressure Control Switch	
LOW WATER PROTECTION	Float Switch	
ACCESSORIES -SUPPLIED	N/A	
-REQUIRED	Ice Storage Bin, Remote Condenser Unit	
OPERATING CONDITIONS	VOLTAGE RANGE	187 - 253 V
	AMBIENT TEMP.	45 -100° F
	WATER SUPPLY TEMP.	45 - 90° F
	WATER SUPPLY PRESSURE	10 - 113 PSIG

Note: We reserve the right to make changes in specifications and design without prior notice.

B. Performance Data

1. KM-320MAH

APPROXIMATE ICE PRODUCTION PER 24 HR.	AMBIENT TEMP. (ºF/ºC)	WATER TEMP. (ºF/ºC) 50/10		70/21		90/32	
	70/21	**325**	147	311	141	287	130
	80/27	315	143	293	133	265	120
	90/32	311	141	**278**	126	251	114
lbs./day kg./day	100/38	304	138	272	123	226	103
APPROXIMATE ELECTRIC CONSUMPTION	70/21	**750**		765		777	
	80/27	761		784		792	
	90/32	765		**800**		810	
watts	100/38	765		802		820	
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70/21	**117**	0.44	97	0.37	86	0.33
	80/27	102	0.39	72	0.27	69	0.26
	90/32	97	0.37	**51**	0.19	44	0.17
gal./day m^3/day	100/38	75	0.28	50	0.19	38	0.14
FREEZING CYCLE TIME	70/21	**29**		31		35	
	80/27	31		34		38	
	90/32	31		**37**		41	
min.	100/38	32		38		45	
HARVEST CYCLE TIME	70/21	**5.5**		4.6		4.2	
	80/27	4.8		3.5		3.4	
	90/32	4.6		**2.5**		2.3	
min.	100/38	3.6		2.5		2.1	
HEAD PRESSURE	70/21	**216**	15.2	235	16.5	255	17.9
	80/27	230	16.2	259	18.2	277	19.5
	90/32	235	16.5	**280**	19.7	299	21.0
PSIG kg/cm^2G	100/38	237	16.7	285	20.0	317	22.3
SUCTION PRESSURE	70/21	**52**	3.7	53	3.7	54	3.8
	80/27	53	3.7	54	3.8	54	3.8
	90/32	53	3.7	**55**	3.9	56	3.9
PSIG kg/cm^2G	100/38	53	3.7	55	3.9	56	3.9

TOTAL HEAT OF REJECTION FROM CONDENSER 7,400 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]

Note:
1. Pressure data is recorded at 5 min. into freezing cycle. The data not in bold should be used for reference only.
2. We reserve the right to make changes in specifications and design without prior notice.

2. KM-320MWH

APPROXIMATE ICE PRODUCTION PER 24 HR.	115-120/60/1	WATER TEMP. (ºF/ºC)					
		50/10		70/21		90/32	
	70/21	**352**	160	348	158	324	147
	80/27	349	158	342	155	309	140
	90/32	348	158	**337**	153	308	140
lbs./day kg./day	100/38	337	153	330	150	281	127
APPROXIMATE ELECTRIC CONSUMPTION	70/21	**730**		730		722	
	80/27	730		730		718	
	90/32	730		**730**		720	
watts	100/38	726		728		710	
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70/21	**430**	1.63	476	1.80	682	2.58
	80/27	465	1.76	535	2.03	822	3.11
	90/32	476	1.80	**585**	2.21	842	3.19
gal./day m^3/day	100/38	605	2.29	645	2.44	1078	4.08
FREEZING CYCLE TIME	70/21	**27**		28		30	
	80/27	28		30		32	
	90/32	28		**31**		33	
min.	100/38	29		31		35	
HARVEST CYCLE TIME	70/21	**5.0**		4.4		4.0	
	80/27	4.5		3.5		3.4	
	90/32	4.4		**2.8**		2.6	
min.	100/38	3.6		2.8		2.4	
HEAD PRESSURE	70/21	**263**	18.5	263	18.5	265	18.6
	80/27	263	18.5	263	18.5	265	18.7
	90/32	263	18.5	**263**	18.5	265	18.6
PSIG kg/cm^2G	100/38	264	18.6	263	18.5	267	18.8
SUCTION PRESSURE	70/21	**53**	3.7	54	3.8	55	3.9
	80/27	54	3.8	56	3.9	56	3.9
	90/32	54	3.8	**57**	4.0	58	4.0
PSIG kg/cm^2G	100/38	54	3.8	57	4.0	58	4.1

TOTAL HEAT OF REJECTION FROM CONDENSER	5,700 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]
TOTAL HEAT OF REJECTION FROM COMPRESSOR	1,000 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]
WATER FLOW FOR CONDENSER	45 gal./h [AT 100ºF (38ºC) / WT 90ºF (32ºC)]
PRESSURE DROP OF COOLING WATER LINE	less than 10 PSIG

Note:
1. Pressure data is recorded at 5 min. into freezing cycle. The data not in bold should be used for reference only.
2. We reserve the right to make changes in specifications and design without prior notice.

3. KM-515MAH

APPROXIMATE ICE PRODUCTION PER 24 HR.	AMBIENT TEMP. (ºF/ºC)	WATER TEMP. (ºF/ºC)					
		50/10		70/21		90/32	
	70/21	**501**	227	482	218	447	203
	80/27	486	221	456	207	416	189
	90/32	482	218	**435**	197	396	180
lbs./day kg./day	100/38	472	214	426	193	361	164
APPROXIMATE ELECTRIC CONSUMPTION	70/21	**980**		1012		1038	
	80/27	1005		1055		1071	
	90/32	1012		**1090**		1111	
watts	100/38	1011		1095		1130	
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70/21	**188**	0.71	162	0.61	147	0.56
	80/27	168	0.64	128	0.48	124	0.47
	90/32	162	0.61	**99**	0.38	90	0.34
gal./day m^3/day	100/38	132	0.50	97	0.37	82	0.31
FREEZING CYCLE TIME	70/21	**26**		27		30	
	80/27	27		30		33	
	90/32	27		**32**		35	
min.	100/38	28		33		37	
HARVEST CYCLE TIME	70/21	**4.4**		3.9		3.8	
	80/27	4.0		3.2		3.4	
	90/32	3.9		**2.7**		2.7	
min.	100/38	3.4		2.7		2.7	
HEAD PRESSURE	70/21	**226**	15.9	250	17.6	278	19.5
	80/27	244	17.2	282	19.8	306	21.5
	90/32	250	17.6	**308**	21.7	335	23.5
PSIG kg/cm^2G	100/38	254	17.8	314	22.1	359	25.2
SUCTION PRESSURE	70/21	**45**	3.2	49	3.5	54	3.8
	80/27	48	3.4	55	3.8	60	4.2
	90/32	49	3.5	**59**	4.1	64	4.5
PSIG kg/cm^2G	100/38	50	3.5	60	4.2	69	4.9

TOTAL HEAT OF REJECTION FROM CONDENSER 9,600 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]

Note:

1. Pressure data is recorded at 5 min. into freezing cycle. The data not in bold should be used for reference only.
2. We reserve the right to make changes in specifications and design without prior notice.

4. KM-515MWH

APPROXIMATE ICE PRODUCTION PER 24 HR.	AMBIENT TEMP. (ºF/ºC)	WATER TEMP. (ºF/ºC) 50/10		70/21		90/32	
	70/21	**500**	227	481	218	465	211
	80/27	486	220	457	207	445	202
	90/32	481	218	**436**	198	422	191
lbs./day kg./day	100/38	481	218	433	196	409	186
APPROXIMATE ELECTRIC CONSUMPTION	70/21	**940**		946		952	
	80/27	944		954		958	
	90/32	946		**960**		965	
watts	100/38	946		961		970	
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70/21	**515**	1.95	548	2.07	805	3.05
	80/27	540	2.04	591	2.24	966	3.66
	90/32	548	2.07	**628**	2.38	958	3.63
gal./day m³/day	100/38	688	2.60	705	2.67	1262	4.78
FREEZING CYCLE TIME	70/21	**29**		29		30	
	80/27	29		29		31	
	90/32	29		**29**		31	
min.	100/38	30		30		33	
HARVEST CYCLE TIME	70/21	**3.8**		3.5		3.4	
	80/27	3.6		3.0		3.1	
	90/32	3.5		**2.7**		2.7	
min.	100/38	3.1		2.7		2.7	
HEAD PRESSURE	70/21	**270**	19.0	271	19.0	274	19.3
	80/27	271	19.0	272	19.1	276	19.4
	90/32	271	19.0	**273**	19.2	277	19.5
PSIG kg/cm²G	100/38	272	19.1	274	19.3	280	19.7
SUCTION PRESSURE	70/21	**50**	3.5	52	3.6	56	3.9
	80/27	51	3.6	54	3.8	59	4.2
	90/32	52	3.6	**56**	3.9	61	4.3
PSIG kg/cm²G	100/38	53	3.7	57	4.0	65	4.6

TOTAL HEAT OF REJECTION FROM CONDENSER	8,300 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]
TOTAL HEAT OF REJECTION FROM COMPRESSOR	1,300 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]
WATER FLOW FOR CONDENSER	49 gal./h [AT 100ºF (38ºC) / WT 90ºF (32ºC)]
PRESSURE DROP OF COOLING WATER LINE	less than 10 PSIG

Note:
1. Pressure data is recorded at 5 min. into freezing cycle. The data not in bold should be used for reference only.
2. We reserve the right to make changes in specifications and design without prior notice.

5. KM-515MRH

	AMBIENT TEMP. (ºF/ºC)	WATER TEMP. (ºF/ºC)					
		50/10		70/21		90/32	
APPROXIMATE ICE PRODUCTION PER 24 HR.	70/21	**491**	223	480	218	443	201
	80/27	482	219	465	211	417	189
	90/32	480	218	**452**	205	408	185
lbs./day kg./day	100/38	465	211	442	200	368	167
APPROXIMATE ELECTRIC CONSUMPTION	70/21	**1000**		1026		1058	
	80/27	1020		1061		1091	
	90/32	1026		**1090**		1121	
watts	100/38	1031		1097		1150	
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70/21	**198**	0.75	168	0.64	153	0.58
	80/27	175	0.66	128	0.48	128	0.49
	90/32	168	0.64	**94**	0.36	88	0.33
gal./day m^3/day	100/38	133	0.50	93	0.35	82	0.31
FREEZING CYCLE TIME	70/21	**26**		27		30	
	80/27	27		29		32	
	90/32	27		**31**		34	
min.	100/38	28		31		36	
HARVEST CYCLE TIME	70/21	**5.0**		4.3		4.1	
	80/27	4.5		3.4		3.6	
	90/32	4.3		**2.7**		2.7	
min.	100/38	3.6		2.7		2.7	
HEAD PRESSURE	70/21	**216**	15.2	234	16.4	252	17.7
	80/27	230	16.1	257	18.1	272	19.1
	90/32	234	16.4	**277**	19.5	294	20.6
PSIG kg/cm^2G	100/38	235	16.6	281	19.8	309	21.7
SUCTION PRESSURE	70/21	**47**	3.3	50	3.5	52	3.6
	80/27	49	3.5	54	3.8	54	3.8
	90/32	50	3.5	**57**	4.0	58	4.1
PSIG kg/cm^2G	100/38	50	3.5	57	4.0	59	4.1

TOTAL HEAT OF REJECTION FROM CONDENSER	8,500 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]
TOTAL HEAT OF REJECTION FROM COMPRESSOR	1,400 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]
CONDENSER VOLUME	43 CU. IN (URC-5F)

Note:
1. Pressure data is recorded at 5 min. into freezing cycle. The data not in bold should be used for reference only.
2. We reserve the right to make changes in specifications and design without prior notice.

6. KM-600MAH

	AMBIENT TEMP. (ºF/ºC)	WATER TEMP. (ºF/ºC) 50/10		70/21		90/32	
APPROXIMATE ICE PRODUCTION PER 24 HR.	70/21	**592**	269	566	257	516	234
	80/27	572	260	532	241	474	215
	90/32	566	257	**503**	228	447	203
lbs./day kg./day	100/38	551	250	490	222	396	180
APPROXIMATE ELECTRIC CONSUMPTION	70/21	**1040**		1084		1102	
	80/27	1073		1142		1137	
	90/32	1084		**1190**		1195	
watts	100/38	1073		1191		1200	
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70/21	**259**	0.98	212	0.80	191	0.72
	80/27	223	0.84	150	0.57	154	0.58
	90/32	212	0.80	**99**	0.38	92	0.35
gal./day m^3/day	100/38	160	0.61	97	0.37	85	0.32
FREEZING CYCLE TIME	70/21	**33**		35		38	
	80/27	34		38		42	
	90/32	35		**40**		44	
min.	100/38	36		41		48	
HARVEST CYCLE TIME	70/21	**4.2**		3.6		3.4	
	80/27	3.7		2.7		2.9	
	90/32	3.6		**2.0**		2.0	
min.	100/38	2.9		2.0		2.0	
HEAD PRESSURE	70/21	**238**	16.7	259	18.2	290	20.4
	80/27	254	17.9	287	20.2	319	22.4
	90/32	259	18.2	**310**	21.8	342	24.1
PSIG kg/cm^2G	100/38	266	18.7	318	22.3	372	26.2
SUCTION PRESSURE	70/21	**55**	3.9	56	4.0	58	4.1
	80/27	56	3.9	58	4.0	60	4.2
	90/32	56	4.0	**59**	4.1	61	4.3
PSIG kg/cm^2G	100/38	57	4.0	59	4.2	62	4.4

TOTAL HEAT OF REJECTION FROM CONDENSER 9,500 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]

Note:
1. Pressure data is recorded at 5 min. into freezing cycle. The data not in bold should be used for reference only.
2. We reserve the right to make changes in specifications and design without prior notice.

7. KM-650MAH

APPROXIMATE ICE PRODUCTION PER 24 HR.	AMBIENT TEMP. (ºF/ºC)	WATER TEMP. (ºF/ºC)					
		50/10		70/21		90/32	
	70/21	**661**	300	632	287	591	268
	80/27	639	290	594	269	553	251
	90/32	632	287	**562**	255	520	236
lbs./day kg./day	100/38	624	283	552	250	482	219
APPROXIMATE ELECTRIC CONSUMPTION	70/21	**1180**		1212		1250	
	80/27	1205		1255		1289	
	90/32	1212		**1290**		1326	
watts	100/38	1218		1299		1360	
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70/21	**232**	0.88	194	0.73	172	0.65
	80/27	203	0.77	143	0.54	139	0.53
	90/32	194	0.73	**101**	0.38	89	0.34
gal./day m^3/day	100/38	149	0.56	98	0.37	78	0.30
FREEZING CYCLE TIME	70/21	**29**		31		34	
	80/27	30		34		36	
	90/32	31		**36**		38	
min.	100/38	32		36		41	
HARVEST CYCLE TIME	70/21	**3.5**		3.1		2.9	
	80/27	3.2		2.5		2.6	
	90/32	3.1		**2.0**		2.0	
min.	100/38	2.6		2.0		2.0	
HEAD PRESSURE	70/21	**232**	16.3	252	17.8	280	19.7
	80/27	248	17.4	280	19.7	307	21.6
	90/32	252	17.8	**302**	21.3	331	23.2
PSIG kg/cm^2G	100/38	258	18.1	309	21.7	357	25.1
SUCTION PRESSURE	70/21	**50**	3.5	52	3.7	55	3.9
	80/27	52	3.6	56	3.9	58	4.1
	90/32	52	3.7	**58**	4.1	61	4.3
PSIG kg/cm^2G	100/38	53	3.7	59	4.1	64	4.5

TOTAL HEAT OF REJECTION FROM CONDENSER 11,100 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]

Note:
1. Pressure data is recorded at 5 min. into freezing cycle. The data not in bold should be used for reference only.
2. We reserve the right to make changes in specifications and design without prior notice.

8. KM-650MWH

APPROXIMATE ICE PRODUCTION PER 24 HR.	AMBIENT TEMP. (ºF/ºC)	WATER TEMP. (ºF/ºC) 50/10		70/21		90/32	
	70/21	**661**	300	649	294	616	280
	80/27	652	296	633	287	591	268
	90/32	649	294	**620**	281	581	264
lbs./day kg./day	100/38	637	289	611	277	546	248
APPROXIMATE ELECTRIC CONSUMPTION	70/21	**1080**		1074		1092	
	80/27	1076		1066		1098	
	90/32	1074		**1060**		1086	
watts	100/38	1086		1066		1110	
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70/21	**744**	2.81	784	2.97	1169	4.42
	80/27	775	2.93	838	3.17	1405	5.32
	90/32	784	2.97	**882**	3.34	1380	5.22
gal./day m^3/day	100/38	985	3.73	999	3.78	1838	6.96
FREEZING CYCLE TIME	70/21	**28**		29		31	
	80/27	28		30		32	
	90/32	29		**30**		33	
min.	100/38	29		31		35	
HARVEST CYCLE TIME	70/21	**4.0**		3.5		3.3	
	80/27	3.7		2.9		2.9	
	90/32	3.5		**2.4**		2.3	
min.	100/38	3.0		2.4		2.1	
HEAD PRESSURE	70/21	**239**	16.8	239	16.8	246	17.3
	80/27	239	16.8	240	16.9	250	17.6
	90/32	239	16.8	**240**	16.9	249	17.5
PSIG kg/cm^2G	100/38	243	17.1	242	17.0	257	18.1
SUCTION PRESSURE	70/21	**46**	3.2	47	3.3	50	3.5
	80/27	47	3.3	48	3.4	52	3.7
	90/32	47	3.3	**49**	3.5	53	3.7
PSIG kg/cm^2G	100/38	48	3.4	50	3.5	56	4.0

TOTAL HEAT OF REJECTION FROM CONDENSER	9,500 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]
TOTAL HEAT OF REJECTION FROM COMPRESSOR	1,600 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]
WATER FLOW FOR CONDENSER	73 gal./h [AT 100ºF (38ºC) / WT 90ºF (32ºC)]
PRESSURE DROP OF COOLING WATER LINE	less than 10 PSIG

Note:
1. Pressure data is recorded at 5 min. into freezing cycle. The data not in bold should be used for reference only.
2. We reserve the right to make changes in specifications and design without prior notice.

9. KM-650MWH-M

AWAITING DATA

Note:
1. Pressure data is recorded at 5 min. into freezing cycle. The data not in bold should be used for reference only.
2. We reserve the right to make changes in specifications and design without prior notice.

10. KM-650MRH

APPROXIMATE ICE PRODUCTION PER 24 HR.	AMBIENT TEMP. (ºF/ºC)	WATER TEMP. (ºF/ºC)					
		50/10		70/21		90/32	
	70/21	**632**	287	612	278	574	260
	80/27	617	280	586	266	541	246
	90/32	612	278	**564**	256	521	236
lbs./day kg./day	100/38	601	272	554	251	482	219
APPROXIMATE ELECTRIC CONSUMPTION	70/21	**1220**		1249		1278	
	80/27	1242		1288		1311	
	90/32	1249		**1320**		1346	
watts	100/38	1251		1326		1370	
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70/21	**267**	1.01	216	0.82	195	0.74
	80/27	228	0.86	149	0.56	155	0.59
	90/32	216	0.82	**93**	0.35	88	0.33
gal./day m^3/day	100/38	160	0.61	92	0.35	82	0.31
FREEZING CYCLE TIME	70/21	**30**		32		34	
	80/27	31		33		36	
	90/32	32		**35**		37	
min.	100/38	32		35		39	
HARVEST CYCLE TIME	70/21	**4.1**		3.5		3.3	
	80/27	3.7		2.7		2.9	
	90/32	3.5		**2.1**		2.1	
min.	100/38	3.0		2.1		2.1	
HEAD PRESSURE	70/21	**211**	14.9	231	16.3	253	17.8
	80/27	227	15.9	258	18.1	277	19.5
	90/32	231	16.3	**280**	19.7	301	21.1
PSIG kg/cm^{2}G	100/38	234	16.5	285	20.0	320	22.5
SUCTION PRESSURE	70/21	**51**	3.6	53	3.7	56	3.9
	80/27	52	3.7	55	3.8	58	4.1
	90/32	53	3.7	**56**	3.9	59	4.2
PSIG kg/cm^{2}G	100/38	54	3.8	57	4.0	**62**	4.4

TOTAL HEAT OF REJECTION FROM CONDENSER	9600 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]
TOTAL HEAT OF REJECTION FROM COMPRESSOR	1500 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]
CONDENSER VOLUME	40 CU. IN (URC-5F)

Note:
1. Pressure data is recorded at 5 min. into freezing cycle. The data not in bold should be used for reference only.
2. We reserve the right to make changes in specifications and design without prior notice.

11. KM-901MAH

APPROXIMATE ICE PRODUCTION PER 24 HR.	AMBIENT TEMP. (ºF/ºC)	WATER TEMP. (ºF/ºC) 50/10		70/21		90/32	
	70/21	**874**	396	832	378	785	356
	80/27	842	382	778	353	736	334
	90/32	832	378	**732**	332	687	312
lbs./day kg./day	100/38	826	375	721	327	646	293
APPROXIMATE ELECTRIC CONSUMPTION	70/21	**1600**		1632		1658	
	80/27	1625		1675		1691	
	90/32	1632		**1710**		1731	
watts	100/38	1631		1715		1750	
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70/21	**240**	0.91	212	0.80	187	0.71
	80/27	219	0.83	175	0.66	158	0.60
	90/32	212	0.80	**143**	0.54	123	0.46
gal./day m^3/day	100/38	175	0.66	139	0.52	103	0.39
FREEZING CYCLE TIME	70/21	**19**		20		22	
	80/27	20		22		24	
	90/32	20		**24**		26	
min.	100/38	21		24		27	
HARVEST CYCLE TIME	70/21	**4.3**		3.9		3.6	
	80/27	4.0		3.3		3.1	
	90/32	3.9		**2.8**		2.6	
min.	100/38	3.3		2.7		2.4	
HEAD PRESSURE	70/21	**219**	15.4	238	16.7	261	18.3
	80/27	234	16.4	263	18.5	284	20.0
	90/32	238	16.7	**284**	20.0	306	21.5
PSIG kg/cm^2G	100/38	242	17.0	289	20.3	327	23.0
SUCTION PRESSURE	70/21	**35**	2.5	37	2.6	41	2.9
	80/27	36	2.6	39	2.7	44	3.1
	90/32	37	2.6	**41**	2.9	46	3.2
PSIG kg/cm^2G	100/38	38	2.7	42	3.0	50	3.5

TOTAL HEAT OF REJECTION FROM CONDENSER 15,400 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]

Note:
1. Pressure data is recorded at 5 min. into freezing cycle. The data not in bold should be used for reference only.
2. We reserve the right to make changes in specifications and design without prior notice.

12. KM-901MWH

APPROXIMATE ICE PRODUCTION PER 24 HR.	AMBIENT TEMP. (ºF/ºC)	WATER TEMP. (ºF/ºC)					
		50/10		70/21		90/32	
	70/21	**912**	414	887	402	849	385
	80/27	893	405	854	388	815	370
	90/32	887	402	**827**	375	787	357
lbs./day kg./day	100/38	878	398	818	371	751	341
APPROXIMATE ELECTRIC CONSUMPTION	70/21	**1480**		1501		1527	
	80/27	1496		1528		1553	
	90/32	1501		**1550**		1576	
watts	100/38	1505		1556		1600	
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70/21	**876**	3.32	1010	3.82	1530	5.79
	80/27	978	3.70	1186	4.49	1893	7.17
	90/32	1010	3.82	**1332**	5.04	1971	7.46
gal./day m^3/day	100/38	1355	5.13	1482	5.61	2559	9.69
FREEZING CYCLE TIME	70/21	**18**		19		20	
	80/27	19		19		21	
	90/32	19		**20**		21	
min.	100/38	19		20		22	
HARVEST CYCLE TIME	70/21	**4.1**		3.8		3.6	
	80/27	3.9		3.4		3.3	
	90/32	3.8		**3.1**		2.9	
min.	100/38	3.4		3.0		2.7	
HEAD PRESSURE	70/21	**227**	16.0	230	16.1	240	16.9
	80/27	229	16.1	233	16.4	247	17.4
	90/32	230	16.1	**236**	16.6	249	17.5
PSIG kg/cm^2G	100/38	234	16.4	239	16.8	260	18.3
SUCTION PRESSURE	70/21	**33**	2.3	34	2.4	38	2.6
	80/27	34	2.4	36	2.5	40	2.8
	90/32	34	2.4	**37**	2.6	41	2.9
PSIG kg/cm^2G	100/38	36	2.5	38	2.7	45	3.2

TOTAL HEAT OF REJECTION FROM CONDENSER	13,500 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]
TOTAL HEAT OF REJECTION FROM COMPRESSOR	2,100 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]
WATER FLOW FOR CONDENSER	100 gal./h [AT 100ºF (38ºC) / WT 90ºF (32ºC)]
PRESSURE DROP OF COOLING WATER LINE	less than 10 PSIG

Note:
1. Pressure data is recorded at 5 min. into freezing cycle. The data not in bold should be used for reference only.
2. We reserve the right to make changes in specifications and design without prior notice.

13. KM-901MRH

APPROXIMATE ICE PRODUCTION PER 24 HR.	AMBIENT TEMP. (ºF/ºC)	WATER TEMP. (ºF/ºC)					
		50/10		70/21		90/32	
	70/21	**889**	403	859	389	803	364
	80/27	866	393	818	371	755	343
	90/32	859	389	**785**	356	724	328
lbs./day kg./day	100/38	843	382	771	350	668	303
APPROXIMATE ELECTRIC CONSUMPTION	70/21	**1590**		1643		1664	
	80/27	1630		1712		1705	
	90/32	1643		**1770**		1775	
watts	100/38	1630		1771		1780	
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70/21	**246**	0.93	219	0.83	194	0.74
	80/27	225	0.85	182	0.69	165	0.63
	90/32	219	0.83	**152**	0.57	131	0.50
gal./day m^3/day	100/38	182	0.69	147	0.56	112	0.42
FREEZING CYCLE TIME	70/21	**18**		20		21	
	80/27	19		21		23	
	90/32	20		**22**		24	
min.	100/38	20		23		26	
HARVEST CYCLE TIME	70/21	**4.3**		3.9		3.6	
	80/27	4.0		3.4		3.2	
	90/32	3.9		**2.9**		2.7	
min.	100/38	3.4		2.8		2.4	
HEAD PRESSURE	70/21	**208**	14.6	229	16.1	252	17.7
	80/27	224	15.7	256	18.0	277	19.5
	90/32	229	16.1	**279**	19.6	301	21.2
PSIG kg/cm^2G	100/38	232	16.3	284	20.0	322	22.6
SUCTION PRESSURE	70/21	**35**	2.5	37	2.6	41	2.9
	80/27	37	2.6	40	2.8	45	3.1
	90/32	37	2.6	**43**	3.0	47	3.3
PSIG kg/cm^2G	100/38	38	2.7	44	3.1	51	3.6

TOTAL HEAT OF REJECTION FROM CONDENSER	14,000 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]
TOTAL HEAT OF REJECTION FROM COMPRESSOR	2,200 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]
CONDENSER VOLUME	121 CU. IN (URC-9F)

Note:
1. Pressure data is recorded at 5 min. into freezing cycle. The data not in bold should be used for reference only.
2. We reserve the right to make changes in specifications and design without prior notice.

14. KM-901MRH3

APPROXIMATE ICE PRODUCTION PER 24 HR.	AMBIENT TEMP. (ºF/ºC)	WATER TEMP. (ºF/ºC) 50/10		70/21		90/32	
	70/21	**899**	408	874	397	817	371
	80/27	880	399	842	382	772	350
	90/32	874	397	**815**	370	749	340
lbs./day kg./day	100/38	855	388	800	363	689	313
APPROXIMATE ELECTRIC CONSUMPTION	70/21	**1670**		1717		1755	
	80/27	1706		1779		1803	
	90/32	1717		**1830**		1861	
watts	100/38	1716		1837		1890	
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70/21	**254**	0.96	222	0.84	203	0.77
	80/27	230	0.87	181	0.69	174	0.66
	90/32	222	0.84	**147**	0.56	134	0.51
gal./day m^3/day	100/38	185	0.70	144	0.54	123	0.46
FREEZING CYCLE TIME	70/21	**19**		20		21	
	80/27	20		21		23	
	90/32	20		**22**		24	
min.	100/38	20		23		26	
HARVEST CYCLE TIME	70/21	**4.4**		3.9		3.6	
	80/27	4.0		3.3		3.2	
	90/32	3.9		**2.8**		2.6	
min.	100/38	3.4		2.7		2.4	
HEAD PRESSURE	70/21	**206**	14.5	225	15.8	248	17.5
	80/27	220	15.5	249	17.5	272	19.1
	90/32	225	15.8	**270**	19.0	293	20.6
PSIG kg/cm^2G	100/38	229	16.1	275	19.4	315	22.1
SUCTION PRESSURE	70/21	**36**	2.5	38	2.7	41	2.9
	80/27	37	2.6	40	2.8	44	3.1
	90/32	38	2.7	**42**	3.0	46	3.2
PSIG kg/cm^2G	100/38	39	2.7	43	3.0	49	3.4

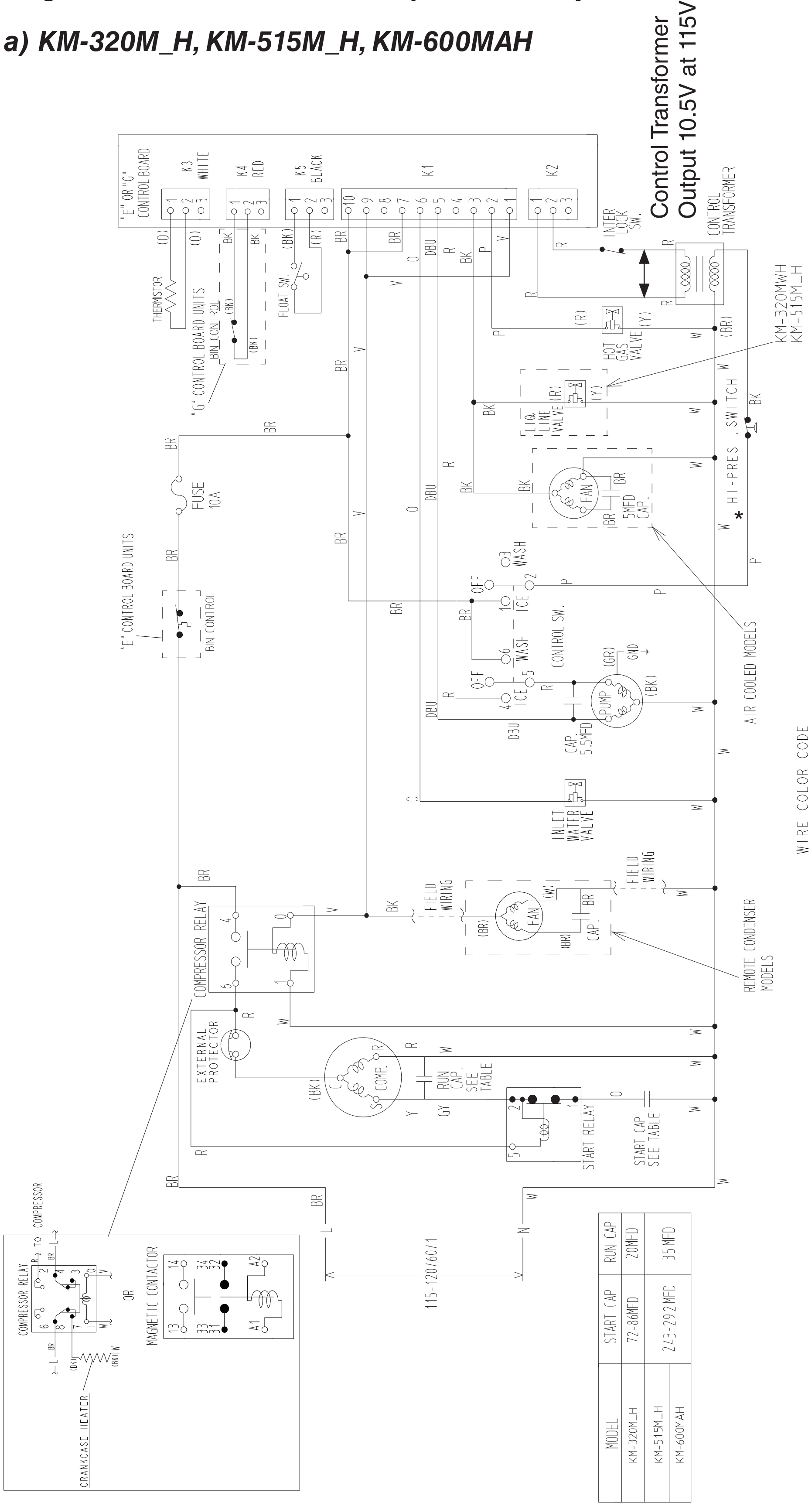
TOTAL HEAT OF REJECTION FROM CONDENSER	14,100 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]
TOTAL HEAT OF REJECTION FROM COMPRESSOR	2,200 BTU/h [AT 90ºF (32ºC) / WT 70ºF (21ºC)]
CONDENSER VOLUME	121 CU. IN (URC-9F)

Note:
1. Pressure data is recorded at 5 min. into freezing cycle. The data not in bold should be used for reference only.
2. We reserve the right to make changes in specifications and design without prior notice.

C. Wiring Diagrams

1. Diagrams Without Harvest Pump Timer Relays

a) KM-320M_H, KM-515M_H, KM-600MAH



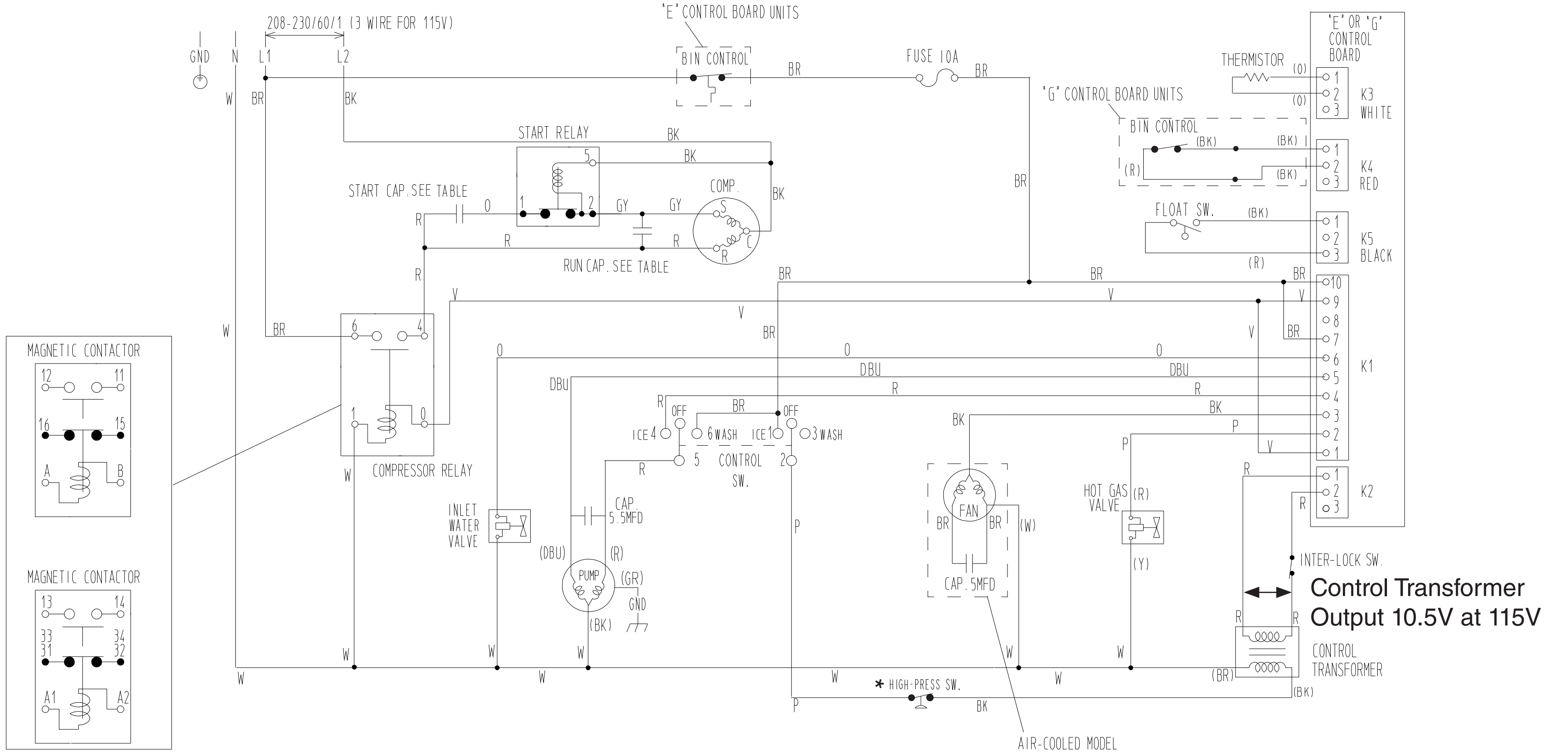
* High-Pressure Switch	Air-Cooled Model	Water-Cooled Model
Cut-out	412^{+22}_{-0} PSIG	384^{+22}_{-0} PSIG
Cut-in	327±22 PSIG	284±22 PSIG

MODEL	START CAP	RUN CAP
KM-320M_H	72-86MFD	20MFD
KM-515M_H	243-292MFD	35MFD
KM-600MAH		

S4 DIP SWITCH SETTING	NO. 1	NO. 2	NO. 3	NO. 4	NO. 5	NO. 6	NO. 7	NO. 8	NO. 9	NO. 10
KM-320M_H	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
KM-515M_H	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
KM-600MAH	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF

S5 DIP SWITCH SETTING	NO. 1	NO. 2	NO. 3	NO. 4	NO. 5
KM-320M_H, KM-515M_H, KM-600MAH	OFF	OFF	OFF	OFF	OFF

b) KM-650MAH, KM-650MWH, KM-901MAH, KM-901MWH



WIRE COLOR CODE

BK BLACK
BR BROWN
DBU DARK BLUE
GR GREEN
GY GRAY
O ORANGE
P PINK
R RED
V VIOLET
W WHITE
Y YELLOW

COMP. RUN / START CAP. TABLE

MODEL	AUX. CODE	RUN CAP.	START CAP.
KM-650MAH KM-650MWH	V-1 AND EARLIER	25MFD	175-216 MFD
KM-650MAH KM-650MWH	V-2 AND LATER	15MFD	88 - 108 MFD
KM-901MAH KM-901MWH	ALL	30MFD	145-174 MFD

'E' AND 'G' CONTROL BOARD
S4 DIP SWITCH SETTINGS

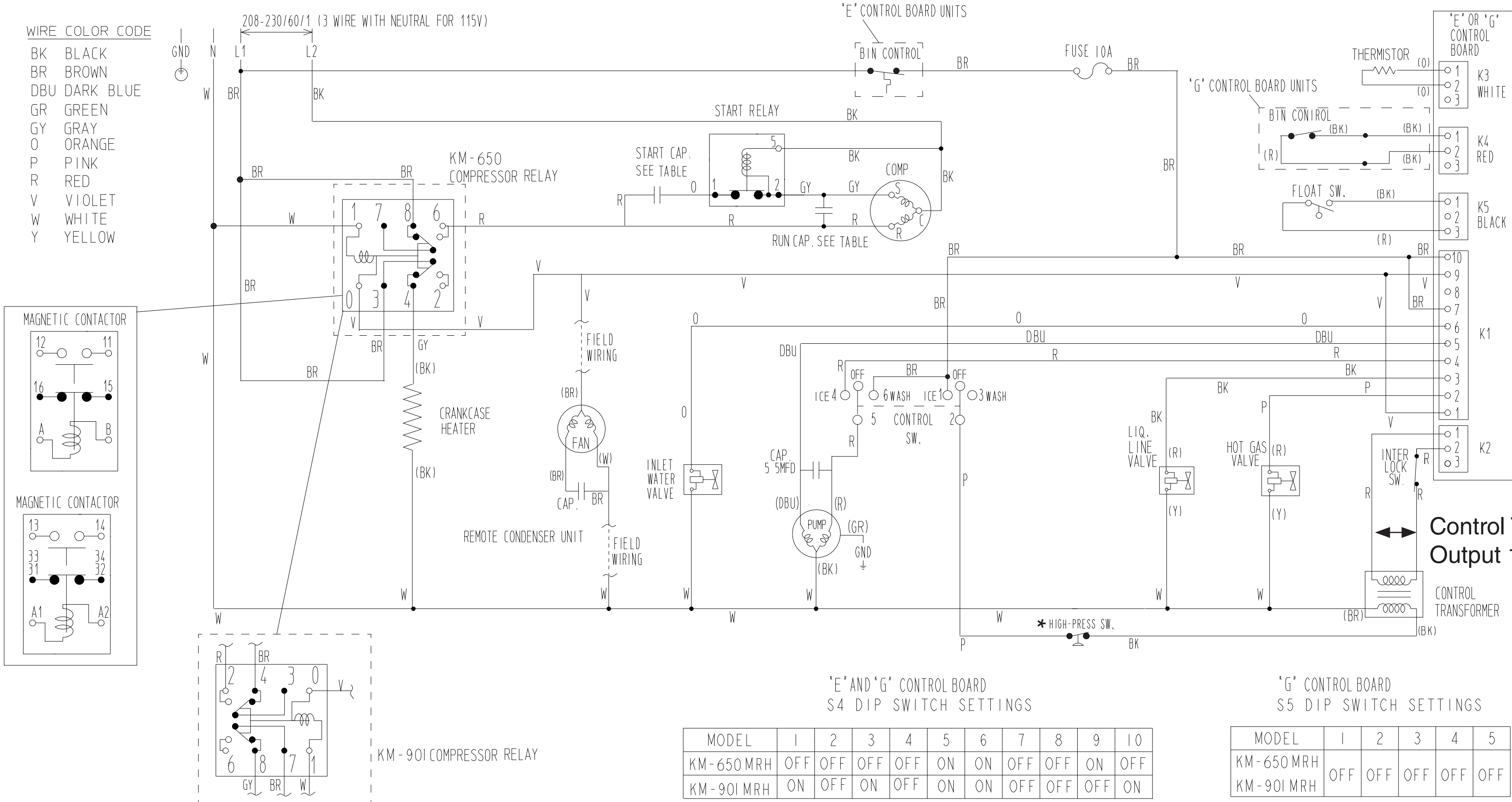
MODEL	1	2	3	4	5	6	7	8	9	10
KM-650MAH KM-650MWH	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
KM-901MAH KM-901MWH	ON	OFF	ON	OFF	ON	ON	OFF	OFF	OFF	ON

'G' CONTROL BOARD
S5 DIP SWITCH SETTINGS

MODEL	1	2	3	4	5
KM-650MAH KM-650MWH KM-901MAH KM-901MWH	OFF	OFF	OFF	OFF	OFF

* High-Pressure Switch		
	Air-Cooled Model	Water-Cooled Model
Cut-out	$412\pm^{22}_{0}$ PSIG	$384\pm^{22}_{0}$ PSIG
Cut-in	327±22 PSIG	284±22 PSIG

c) KM-650MRH, KM-901MRH



'E' AND 'G' CONTROL BOARD
S4 DIP SWITCH SETTINGS

MODEL	1	2	3	4	5	6	7	8	9	10
KM-650MRH	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	ON	OFF
KM-901MRH	ON	OFF	ON	OFF	ON	ON	OFF	OFF	OFF	ON

'G' CONTROL BOARD
S5 DIP SWITCH SETTINGS

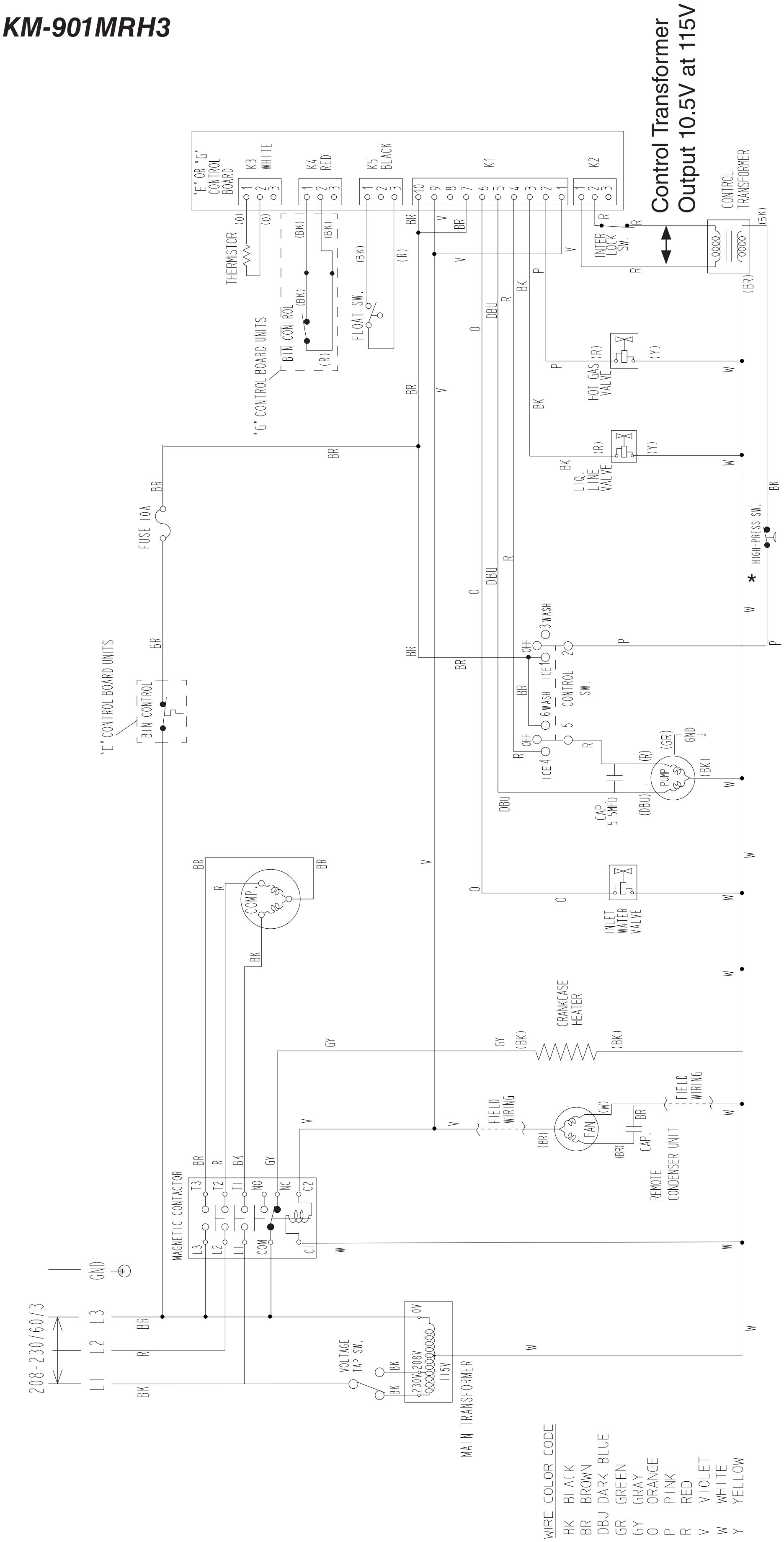
MODEL	1	2	3	4	5
KM-650MRH KM-901MRH	OFF	OFF	OFF	OFF	OFF

COMP. RUN / START CAP. TABLE

MODEL	AUX. CODE	RUN CAP.	START CAP.
KM-650MRH	V-1 AND EARLIER	25 MFD	175-216 MFD
	V-2 AND LATER	17.5 MFD	72-86 MFD
KM-901MRH	ALL	30 MFD	145-174 MFD

* High-Pressure Switch	
Cut-out	$412\pm^{22}_{0}$ PSIG
Cut-in	327±22 PSIG

d) KM-901MRH3



'G' CONTROL BOARD
S5 DIP SWITCH SETTINGS

MODEL	1	2	3	4	5
KM-901MRH3	OFF	OFF	OFF	OFF	OFF

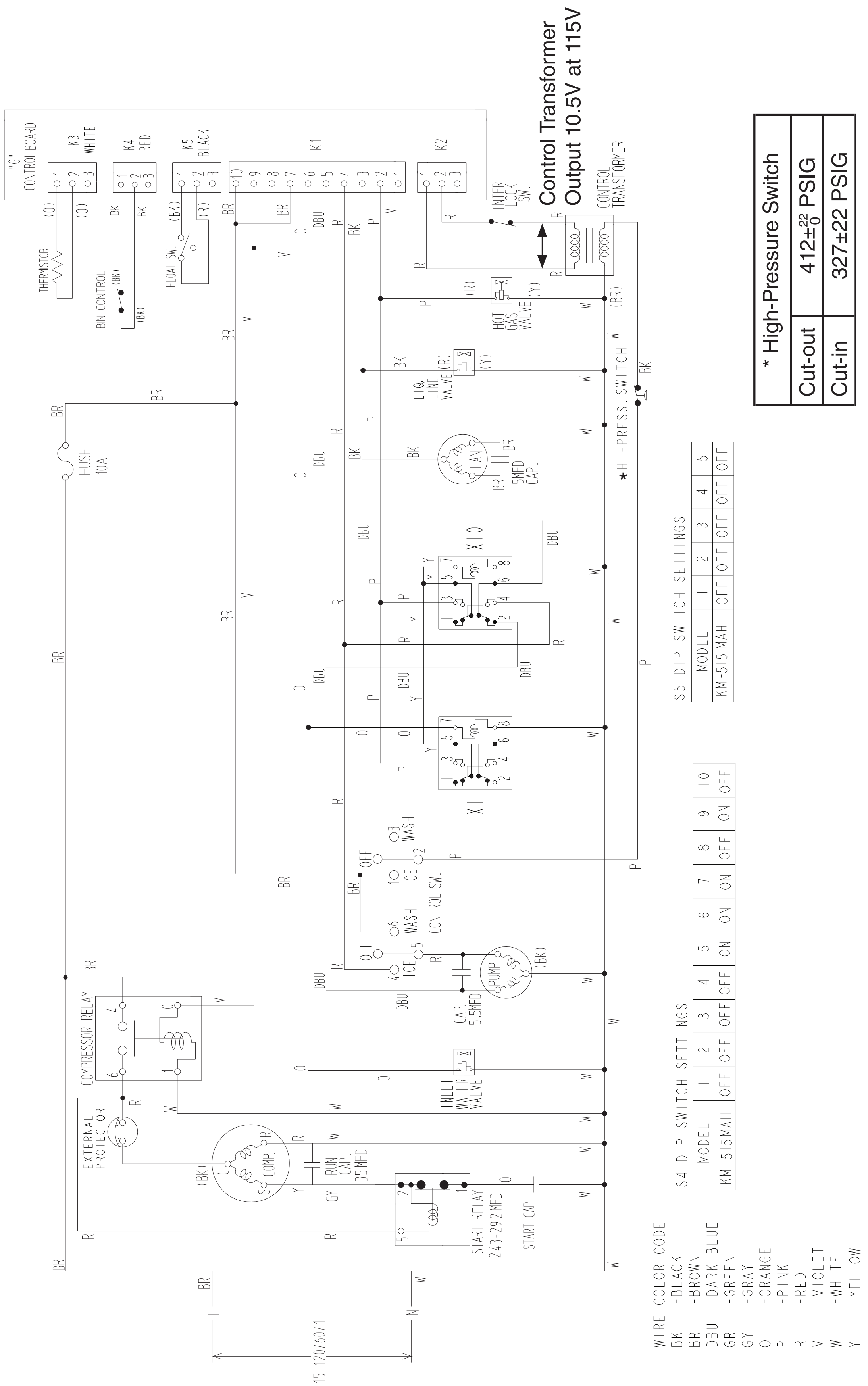
'E' AND 'G' CONTROL BOARD
S4 DIP SWITCH SETTINGS

MODEL	1	2	3	4	5	6	7	8	9	10
KM-901MRH3	ON	OFF	ON	OFF	ON	ON	OFF	OFF	OFF	ON

* High-Pressure Switch	
Cut-out	412^{+22}_{-0} PSIG
Cut-in	327±22 PSIG

2. Diagrams With Harvest Pump Timer Relays

a) KM-515MAH



S5 DIP SWITCH SETTINGS

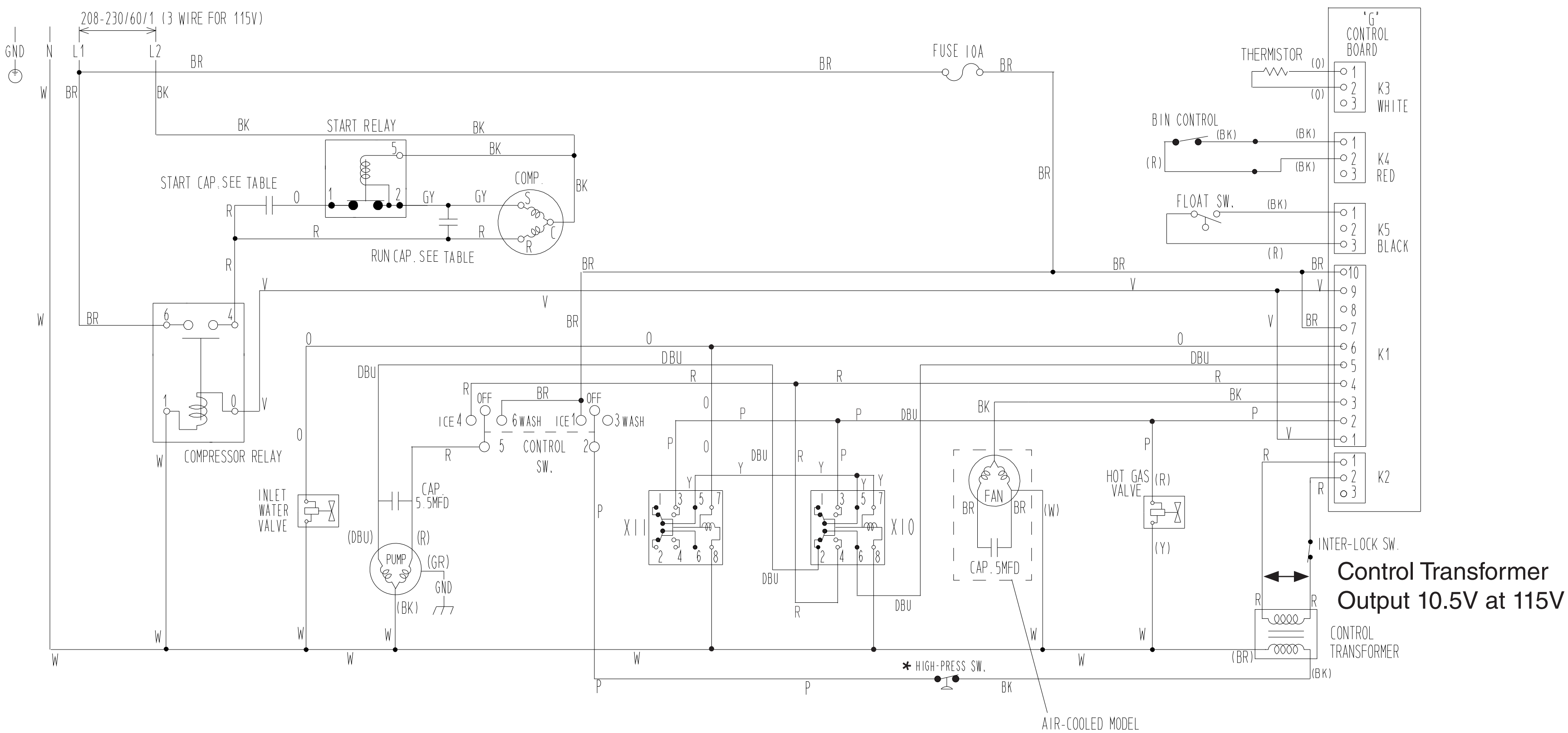
MODEL	1	2	3	4	5
KM-515MAH	OFF	OFF	OFF	OFF	OFF

S4 DIP SWITCH SETTINGS

MODEL	1	2	3	4	5	6	7	8	9	10
KM-515MAH	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	ON	OFF

* High-Pressure Switch	
Cut-out	412^{+22}_{-0} PSIG
Cut-in	327±22 PSIG

b) KM-650MAH, KM-650MWH, KM-901MAH



WIRE COLOR CODE

BK BLACK
BR BROWN
DBU DARK BLUE
GR GREEN
GY GRAY
O ORANGE
P PINK
R RED
V VIOLET
W WHITE
Y YELLOW

COMP. RUN / START CAP. TABLE

MODEL	RUN CAP.	START CAP.
KM-650MAH KM-650MWH	17.5MFD	72-86MFD
KM-901MAH	30MFD	145-174 MFD

S4 DIP SWITCH SETTINGS

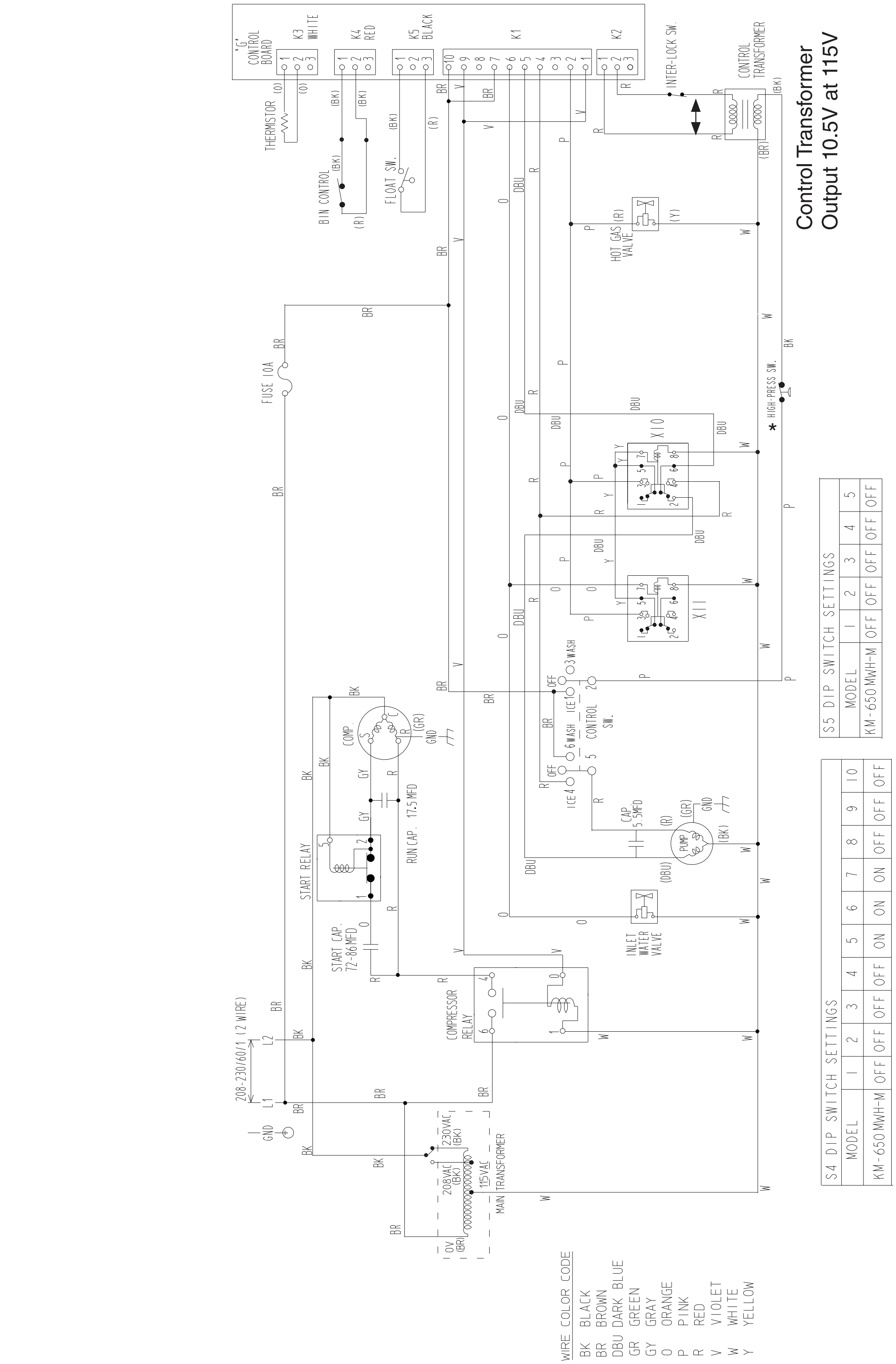
MODEL	1	2	3	4	5	6	7	8	9	10
KM-650MAH	ON	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF
KM-650MWH	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF
KM-901MAH	OFF	OFF	ON	OFF	ON	ON	ON	OFF	OFF	ON

S5 DIP SWITCH SETTINGS

MODEL	1	2	3	4	5
KM-650MAH KM-650MWH KM-901MAH	OFF	OFF	OFF	OFF	OFF

* High-Pressure Switch		
	Air-Cooled Model	Water-Cooled Model
Cut-out	$412\pm^{22}_{0}$ PSIG	$384\pm^{22}_{0}$ PSIG
Cut-in	327±22 PSIG	284±22 PSIG

c) KM-650MWH-M



Control Transformer
Output 10.5V at 115V

S4 DIP SWITCH SETTINGS

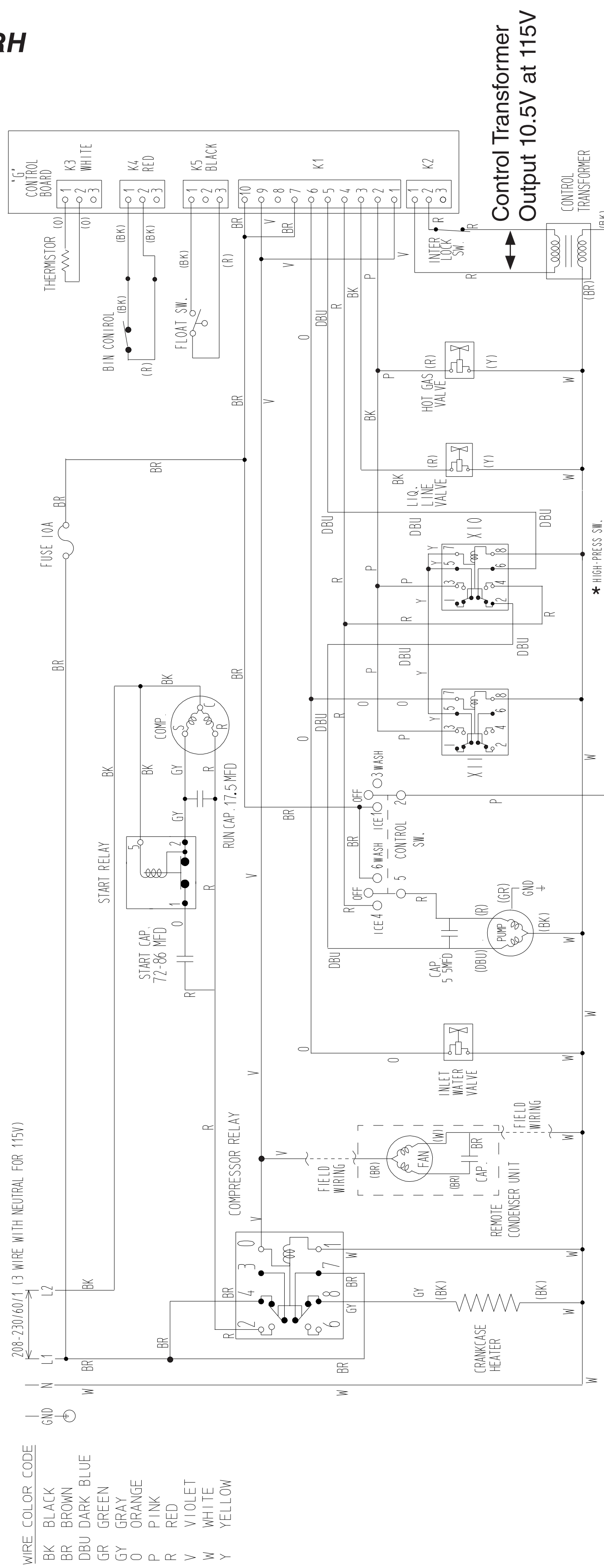
MODEL	1	2	3	4	5	6	7	8	9	10
KM-650MWH-M	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF

S5 DIP SWITCH SETTINGS

MODEL	1	2	3	4	5
KM-650MWH-M	OFF	OFF	OFF	OFF	OFF

* High-Pressure Switch	
Cut-out	384^{+22}_{-0} PSIG
Cut-in	284±22 PSIG

d) KM-650MRH



* High-Pressure Switch	
Cut-out	412^{+22}_{-0} PSIG
Cut-in	327±22 PSIG

S5 DIP SWITCH SETTINGS

MODEL	1	2	3	4	5
KM-650MRH	OFF	OFF	OFF	OFF	OFF

S4 DIP SWITCH SETTINGS

MODEL	1	2	3	4	5	6	7	8	9	10
KM-650MRH	ON	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF